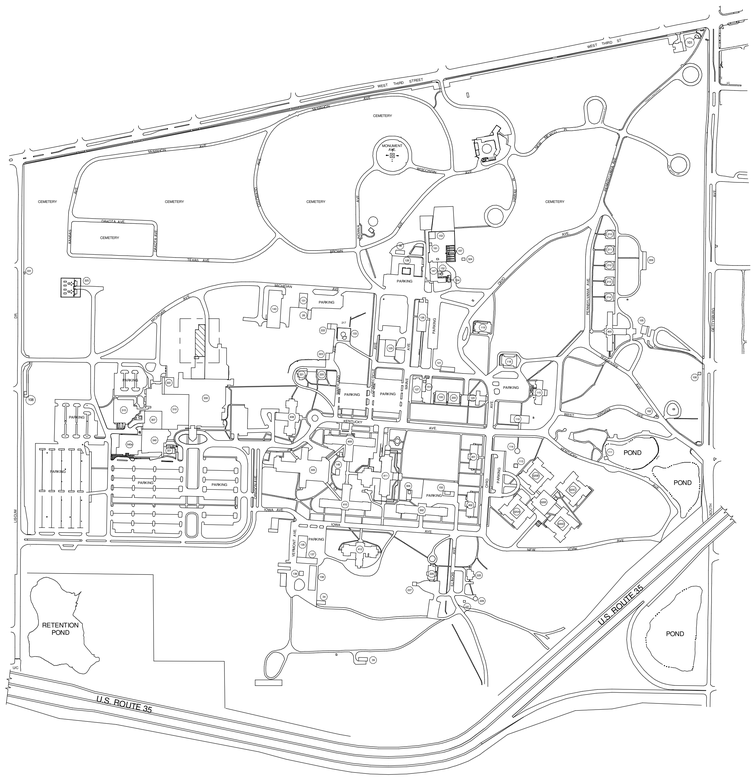
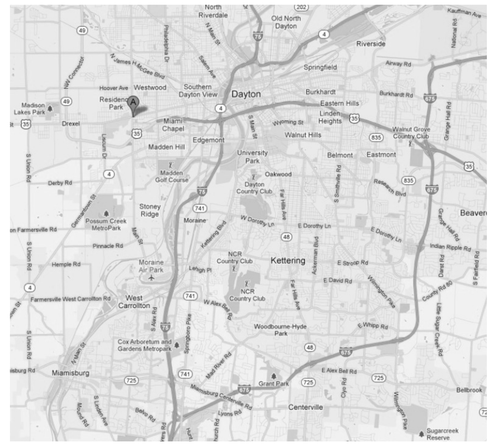
FULLY SPRINKLERED

REPLACE CHILLERS 1 & 2 B330

DEPARTMENT OF VETERANS AFFAIRS MEDICAL CENTER
4100 WEST THIRD STREET
DAYTON, OHIO 45428



CAMPUS PLAN
SCALE: 1" = 300'-0"



VICINITY MAP

DRAWING INDEX - HVAC	
SHEET	**DESCRIPTION**
330GI001	COVER SHEET
330M001	LEGEND AND GENERAL NOTES
330MD101	CHILLER PLANT FLOOR PLAN - REMOVALS
330MP101	CHILLER PLANT FLOOR PLAN - PIPING
330M301	SECTIONS & ISOMETRIC
330M501	DETAILS
330M601	SCHEDULES
330M701	CONTROLS AND AUTOMATION
330E101	SYMBOLS AND SINGLE LINE DIAGRAM
330E501	LIGHTING FIXTURE DESCRIPTIONS AND DETAILS
330ED101	CHILLER PLANT FLOOR PLAN - REMOVALS
330EP101	CHILLER PLANT FLOOR PLAN - POWER

Revisions | Date

CONSULTANTS:

Heapy Project Number: 2013-04014
STATE OF OHIO — GARY S. EODICE E-52755 — REGISTERED PROFESSIONAL ENGINEER
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Drawing Title: COVER SHEET
Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330
Location: Dayton, Ohio
Date: 06/03/2014 | Checked: DLE | Drawn: PCW

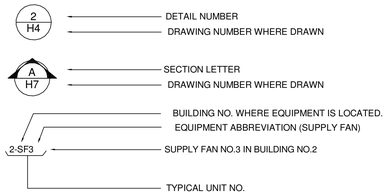
Project No.
VA Project No. 552-15-203
Project No. 2013-04014
Building Number: 330
Drawing Number: 330GI001
Dwg. of

Office of Construction and Facilities Management
Department of Veterans Affairs

6/3/2014 8:37:59 AM

FULLY SPRINKLERED

DRAWING SYMBOLS



PIPING SYMBOLS

HEATING

HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN

AIR CONDITIONING

CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
	MAKE-UP WATER
D	DRAIN LINE
CWS	CONDENSER WATER SUPPLY (FROM TOWER)
CWR	CONDENSER WATER RETURN (TO TOWER)

GENERAL

ET	EXPANSION TANK PIPE
	DIRECTION OF PIPE PITCH (DOWN)
	DIRECTION OF FLOW
	ANCHOR
	PIPE GUIDE
	REDUCER OR INCREASER
	ECCENTRIC REDUCER
	TOP CONNECTION, 45 DEG. OR 90 DEG.
	BOTTOM CONNECTION, 45 DEG. OR 90 DEG.
	SIDE CONNECTION
	CAPPED OUTLET
	RISE OR DROP IN PIPE
	UNION
	ORIFICE UNION
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK.
	STRAINER
	THERMOMETER
	PRESSURE GAGE
	EXISTING PIPE TO BE REMOVED

VALVES

	GATE VALVE
	GLOBE VALVE
C	GATE VALVE WITH 3/4" HOSE END ADAPTER
	CHECK VALVE
	ANGLE GLOBE VALVE
	BUTTERFLY VALVE
	BALL VALVE
	COMBINATION BALANCING/SHUT-OFF VALVE
	CIRCUIT SETTER
	STRAIGHT-THRU MODULATING CONTROL VALVE
	STRAIGHT-THRU TWO-POSITION CONTROL VALVE
	THREE-WAY MODULATING CONTROL VALVE
	AUTOMATIC FLOW CONTROL VALVE
	SAFETY VALVE OR PRESSURE RELIEF
	PRESSURE REDUCING VALVE
	MANUAL AIR VENT
	TEST PLUG (PRESSURE/TEMPERATURE)

CONTROLS

T H	ROOM CONTROL: THERMOSTAT, HUMIDISTAT
T	REMOTE BULB THERMOSTAT
T	DUCT OR PIPE THERMOSTAT (NOTE 1: PROVIDE 12" MIN. LENGTH IN DUCT WHEN SPACE PERMITS)
M	INSERTION TYPE FLOW METER
M	INLINE TYPE FLOW METER
T H	ROOM SENSOR: TEMPERATURE, HUMIDITY
T	DUCT OR PIPE TEMP. SENSOR (SEE NOTE 1 ABOVE)
H	DUCT HUMIDITY SENSOR
SP	DUCT STATIC PRESSURE SENSOR
F S	SMOKE DETECTOR (SEE ELECTRICAL SPECIFICATIONS)
C	HOLDING COIL IN MOTOR STARTER
R2	RELAY COIL
R2-A	CONTACT, NORMALLY OPEN (N.O.)
R2-B	CONTACT, NORMALLY CLOSED (N.C.)
	SWITCH
R	PILOT LIGHT (RED)
H1 N	CONTROL CIRCUIT CONN.
DP SP	DIFFERENTIAL OR STATIC PRESSURE TRANSDUCER
CS	CURRENT SENSING RELAY

ABBREVIATIONS

AC	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AF	AFTER FILTER
AFF	ABOVE FINISHED FLOOR
AFM	AIR FLOW MEASURING DEVICE
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROLS
BWP	BACKWASH PUMP
C	CONVERTOR
CCU	CENTRIFUGAL OR HELICAL ROTARY SCREW CHILLER UNIT
CH	CHILLER
CHP	CHILLED WATER PUMP
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CO	CLEAN OUT
CP	CONDENSATE PUMP
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CW	COLD WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN (TO COOLING TOWER)
CWS	CONDENSER WATER SUPPLY (FROM COOLING TOWER)
D	AUTOMATIC CONTROL DAMPER
Db	DRY BULB TEMPERATURE, DEG. F
dB	DECIBELS
DDC	DIRECT DIGITAL CONTROLS
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
E/A	EXHAUST AIR
ECC	ENGINEERING CONTROL CENTER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ET	EXPANSION TANK
EX.	EXISTING
FACP	FIRE ALARM CONTROL PANEL
FC	FLEXIBLE CONNECTION

ABBREVIATIONS

FD	FLOOR DRAIN
FLR.	FLOOR
FP	FILTER PUMP
GA	GENERAL ALARM
HL	HIGH LIMIT
HP	HORSEPOWER
HWR	HEATING HOT WATER RETURN
HWS	HEATING HOT WATER SUPPLY
HX	HEAT EXCHANGE
HXP	HEAT EXCHANGE PUMP
LL	LOW LIMIT
LPR	LOW PRESSURE STEAM CONDENSATE RETURN
LPS	LOW PRESSURE STEAM SUPPLY (15 PSIG & BELOW)
LTCP	LOCAL TEMPERATURE CONTROL PANEL
LBS/HR	POUNDS PER HOUR
MPR	MEDIUM PRESSURE STEAM CONDENSATE RETURN
MPS	MEDIUM PRESSURE STEAM SUPPLY (16 PSIG THRU 59 PSIG)
MAX.	MAXIMUM
MIN.	MINIMUM
NOM.	NOMINAL
O.A.	OUTSIDE AIR
P	PUMP
PC	PUMPED CONDENSATE
PD	PRESSURE DROP (FEET OF WATER)
PEF	PROPELLER TYPE EXHAUST FAN
PRV	PRESSURE REDUCING VALVE
PUH	PROPELLER UNIT HEATER
PS	SECONDARY CHILLER
Rh	RELATIVE HUMIDITY
RV	POWER TYPE ROOF VENTILATOR
S/A	SUPPLY AIR
SCD	SMOKE CONTROL DAMPER
SD.	SMOKE DAMPER
Sp. Gr.	SPECIFIC GRAVITY
SP	STATIC PRESSURE (INCHES OF WATER)
SPS	STATIC PRESSURE SENSOR
SSR	SOLID SEPARATOR
U/C	DOOR UNDERCUT BY GENERAL CONTRACTOR
UH	UNIT HEATER
V	VALVE
VFD	VARIABLE FREQUENCY DRIVE
VSMC	VARIABLE SPEED MOTOR CONTROLLER
Wb	WET BULB TEMPERATURE, DEG. F

GENERAL NOTES:

1. THESE NOTES APPLY EQUALLY TO THE FULL SET OF DOCUMENTS.
2. INCLUDE ALL WORK NECESSARY TO ACCOMMODATE PHASING. REFER TO GENERAL REQUIREMENTS SECTION 01 00 00.
3. INSULATE DUCTWORK AND PIPING WHERE EXISTING INSULATION HAS BEEN DAMAGED AND/OR REMOVED IN THE PERFORMANCE OF WORK IN THIS PROJECT.
4. THE CONTRACTORS SHALL REFER TO ALL SPECIFICATION SECTIONS AND THESE DRAWINGS FOR DETAILS OF BUILDING CONSTRUCTION TO ENSURE SPACE AND SATISFACTORY ARRANGEMENT FOR THEIR WORK. THE VARIOUS DRAWINGS COMPRISING THE SET ARE INTERDEPENDENT AND MUST BE USED JOINTLY AT ALL TIMES. EACH CONTRACTOR SHALL REFER TO THE GENERAL REQUIREMENTS OF THE CONTRACT. THE NOTES AND SYMBOLS INDICATED ON THE DRAWINGS ARE FOR THE GUIDANCE OF ALL TRADES INVOLVED IN THE PROJECT AND MUST BE FOLLOWED TO EXECUTE THE WORK AS INTENDED. IF DISCREPANCIES OCCUR, CONTACT THE PROJECT ENGINEER (COR) THRU THE CONTRACTING OFFICER FOR CLARIFICATION BEFORE PROCEEDING.
5. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR THE CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. SEE SPECIFICATIONS FOR MORE SPECIFIC DETAILS ON RESPONSIBILITIES.
6. ALL WORK MUST BE COORDINATED WITH THE CONTRACTING OFFICER AND PROJECT ENGINEER (COR) TO MAINTAIN OPERATION OF THE EXISTING FACILITY.
7. EACH CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF OTHERS. HE SHALL KEEP HIMSELF INFORMED OF THE PROGRESS AND DETAIL DEVELOPMENT OF THE WORK OF OTHERS AND SHALL BE RESPONSIBLE FOR COORDINATING AND EXPEDITING HIS WORK WITH OTHERS SO THAT THE PROGRESS OF THE TOTAL WORK SHALL BE KEPT ON SCHEDULE.
8. ALL WORK SHALL BE PERFORMED IN COMPLETE COMPLIANCE WITH ALL GOVERNING CODES AND STANDARDS.
9. EXISTING CONDITIONS SHOWN HAVE BEEN BASED UPON VISUAL OBSERVATION AND AVAILABLE DRAWING INFORMATION, AND MAY BE AT VARIANCE WITH ACTUAL WORK IN PLACE. THE CONTRACTOR SHALL TAKE ALL NECESSARY FIELD MEASUREMENTS AND FIELD VERIFY ALL CONDITIONS AFFECTING THE EXECUTION OF THE WORK. ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE WORK SHOWN ON THE CONTRACT DOCUMENTS WHICH MAY IMPACT THE PROGRESS OF THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER IN WRITING FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
10. EACH CONTRACTOR AND/OR TRADE, FITTING OR PLACING HIS WORK INTO OR ON THE WORK OF OTHERS DOES SO WITH THE UNDERSTANDING THAT THE INSTALLATION OF HIS WORK CONSTITUTES HIS ACCEPTANCE OF THE SUITABILITY OF THE WORK IN PLACE. IF THE WORK OF OTHERS IS NOT ACCEPTABLE, HE SHALL NOTIFY THE PROJECT ENGINEER (COR) AND SUCH WORK SHALL BE CORRECTED. ANY NEW WORK INSTALLED IN UNSUITABLE EXISTING CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR TRADE INSTALLING THE NEW WORK. NO CLAIMS FOR ADDITIONAL COMPENSATION FOR CORRECTING WORK INSTALLED IN UNSUITABLE EXISTING CONDITIONS WILL BE CONSIDERED.
11. IF, IN THE PERFORMANCE OF THIS WORK, MATERIALS ARE OBSERVED WHICH ARE SUSPECTED TO CONTAIN ASBESTOS, THE CONTRACTOR SHALL IMMEDIATELY INFORM THE PROJECT ENGINEER (COR). WORK THAT WOULD EXPOSE WORKERS TO THE INHALATION OF ASBESTOS PARTICLE SHALL BE TERMINATED. WORK MAY BE RESUMED ONLY AFTER A DETERMINATION HAS BEEN MADE AND UNSAFE MATERIALS HAVE BEEN REMOVED OR ENCAPSULATED AND THE AREA DECLARED SAFE.
12. ALL PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES SHALL BE PROTECTED AND/OR FIRE-STOPPED AS REQUIRED TO MAINTAIN FIRE-RATINGS INDICATED. COORDINATE WITH ALL TRADES TO ENSURE FIRE-RATED PENETRATION REQUIREMENTS AND DETAILS ARE MET.
13. ANNULAR SPACE OF ALL PIPE, CONDUIT, DUCT & OTHER SIMILAR PENETRATIONS OF FIRE RATED ASSEMBLIES SHALL BE FIRESTOPPED. IN ADDITION, PENETRATIONS THROUGH 0-HOUR RATED WALLS & FLOORS SHALL BE FIRESTOPPED TO RETARD PASSAGE OF FIRE & SMOKE.
14. FOR TYPICAL PIPING CONNECTIONS TO EQUIPMENT, SEE STANDARD DETAILS.
15. WHERE DUCTS OR PIPES ARE REMOVED THRU WALL/FLOOR/ROOF THAT IS TO REMAIN, PATCH WALL/FLOOR/ROOF OPENING TO MATCH EXISTING WHERE OPENING IS NOT RE-USED.
16. ALL PRESSURES LISTED ARE GAGE PRESSURE UNLESS OTHERWISE NOTED.
17. ALL CUTTING AND PATCHING REQUIRED FOR THIS PROJECT SHALL BE INCLUDED IN THE CONTRACT. REFINISH ANY SURFACE DISTURBED UNDER THIS WORK TO MATCH EXISTING.
18. ANY REMOVED EQUIPMENT SHALL BE TURNED OVER TO THE VA. ITEMS NOT DESIRED BY THE VA SHALL BE REMOVED FROM THE PREMISES AND DISPOSED OF PROPERLY BY THE CONTRACTOR. COORDINATE ITEMS TO BE TURNED OVER WITH COR. THESE INCLUDE CHILLER CONTROL PANELS AND UNIT CONTROLS, PURGE UNITS AND REFRIGERANT.
19. THE CONTRACT DRAWINGS ARE NOT INTENDED TO SHOW EVERY VERTICAL OR HORIZONTAL OFFSET WHICH MAY BE NECESSARY TO COMPLETE THE SYSTEMS. COORDINATE WORK IN ADVANCE WITH ALL OTHER TRADES AND REPORT IMMEDIATELY ANY DIFFICULTIES WHICH CAN BE ANTICIPATED.
20. FIELD VERIFY EXISTING CONDITIONS, INCLUDING DUCT, PIPE AND EQUIPMENT SIZES, SERVICES AND LOCATIONS PRIOR TO PERFORMING WORK.
21. ALL ABANDONED EXTRANEOUS PIPING, DUCTWORK, SUPPORTS, CONTROLS, ETC. SHALL BE REMOVED.
22. WHERE CONTROL DEVICES ARE REMOVED, PNEUMATIC LINES SHALL BE REMOVED BACK TO MAIN AND CAPPED; AND CONTROL WIRING AND CONDUIT SHALL BE REMOVED BACK TO SOURCE.
23. ALL EXISTING DUCTWORK, PIPING, EQUIPMENT, CONTROLS, ETC. SHOWN ON REMOVAL PLAN(S) SHALL BE REMOVED. THE MAJORITY OF WORK TO BE REMOVED IS SHOWN. REMOVE ALL INCIDENTAL AND/OR ABANDONED DUCTWORK, PIPING, ETC. THAT MAY NOT BE SHOWN BUT IS ASSOCIATED WITH THE REMOVAL WORK.
24. WHERE EXISTING HVAC UTILITIES IN SERVICE WILL BE DISRUPTED DURING THE CONSTRUCTION OF THIS PROJECT, THIS WORK SHALL BE PERFORMED ON WEEKENDS OR WEEK NIGHTS, IF REQUIRED BY THE PROJECT ENGINEER (COR). DOWNTIME SHALL BE KEPT TO A MINIMUM, AND SHALL BE COORDINATED AND SCHEDULED WELL IN ADVANCE WITH THE PROJECT ENGINEER (COR).
25. APPROXIMATE ELEVATIONS NOTED ON FLOOR PLANS ARE TO THE BOTTOM OF DUCTS AND EQUIPMENT, AND TO THE CENTER OF PIPES.

DEDUCT ALTERNATES:

1. DEDUCT THE PURGE SYSTEM UPGRADE FOR THE EXISTING CHILLERS 330-CH3 AND 330-CH4.
2. DEDUCT THE NEW SHUT OFF VALVES ASSOCIATED WITH THE NEW CHILLERS (4 VALVES TOTAL) AND NEW SHUT OFF VALVES ASSOCIATED WITH THE NEW PUMPS (4 VALVES TOTAL, TRIPLE DUTY VALVES TO REMAIN). RE-USE EXISTING SHUT OFF VALVES.

three inches = one foot
one and one-half inches = one foot
one inch = one foot
three-quarters inch = one foot
one-half inch = one foot
three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

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Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

STATE OF OHIO · GARY S. EODICE · E-52755 · REGISTERED PROFESSIONAL ENGINEER

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Drawing Title: LEGEND AND GENERAL NOTES

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014 | Checked: DLE | Drawn: PCW

Project No. | VA Project No. 552-15-203 | Project No. 2013-04014

Building Number: 330

Drawing Number: 330M001

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Office of Construction and Facilities Management

Department of Veterans Affairs

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GENERAL NOTES

A REFER TO SHEET 330M001 FOR LEGEND, ABBREVIATIONS AND ADDITIONAL GENERAL NOTES.

NOTES

1 EXISTING PIPING TO REMAIN.

2 EXISTING PROPELLER UNIT HEATER TO REMAIN.

3 EXISTING FAN COIL UNIT TO REMAIN.

4 EXISTING CHILLER TO REMAIN.

5 EXISTING CONCRETE HOUSEKEEPING PAD TO REMAIN.

6 EXISTING PUMP PAD TO REMAIN.

7 EXISTING WATER FILTER TO REMAIN.

8 EXISTING COOLING TOWER CHEMICAL FEED SYSTEM TO REMAIN.

9 REFER TO 1/4" = 1'-0" SCALE PLAN ON THIS SHEET FOR MORE DETAIL OF WORK IN THIS AREA.

10 REMOVE PIPING BACK TO THIS POINT FOR RECONNECTION IN NEW WORK. REUSE EXISTING PIPING ELBOWS/FITTINGS IN NEW WORK.

11 REMOVE EXISTING PUMP AND ASSOCIATED PIPING, VALVES, CONTROLS, ETC. CONCRETE PAD TO REMAIN.

12 REMOVE EXISTING CHILLER AND ASSOCIATED PIPING, VALVES, CONTROLS, ETC. CONCRETE HOUSEKEEPING PAD TO REMAIN. VERIFY WITH COR ITEMS TO BE TURNED OVER TO VA, INCLUDING BUT NOT LIMITED TO THE EXISTING CONTROL PANELS AND ASSOCIATED COMPONENTS, EXISTING REFRIGERANT, EXISTING PURGE UNITS, ETC.

13 EXISTING AIR DEVICE TO REMAIN.

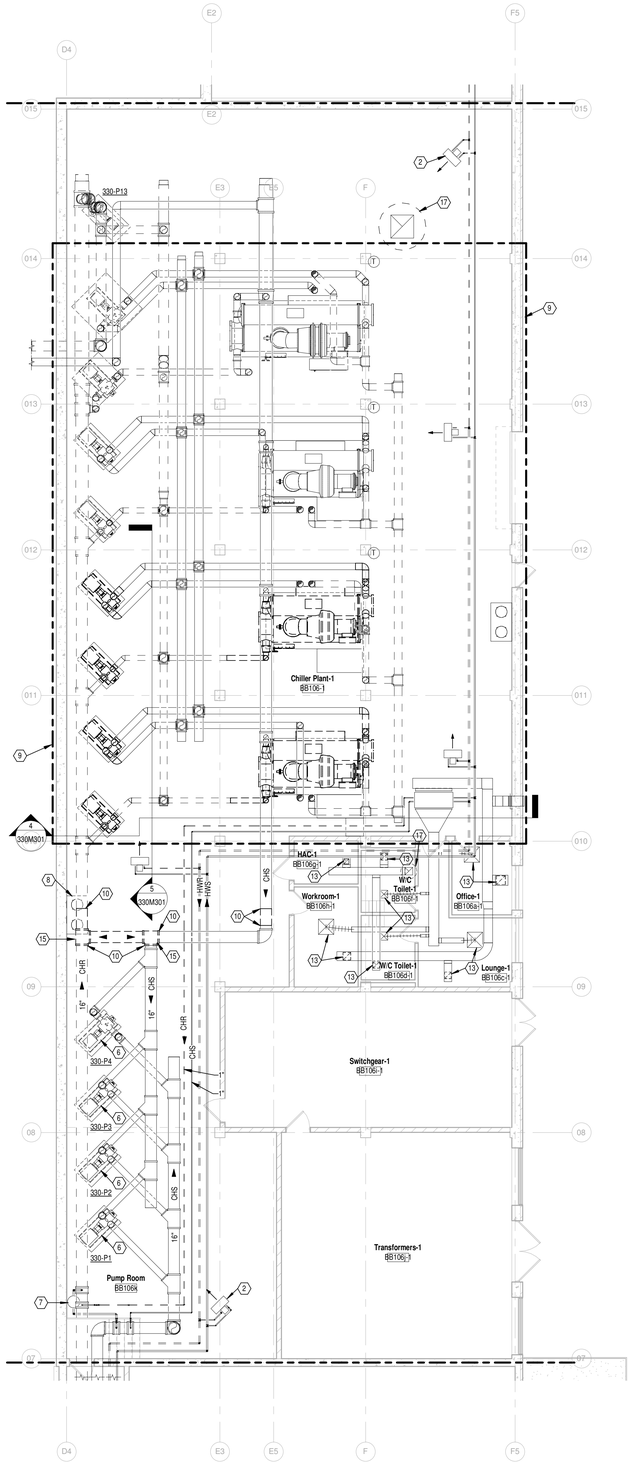
14 REFER TO 1/8"=1'-0" SCALE PLAN ON THIS SHEET FOR CONTINUATION.

15 REUSE MECHANICAL PIPE FITTING IN NEW WORK.

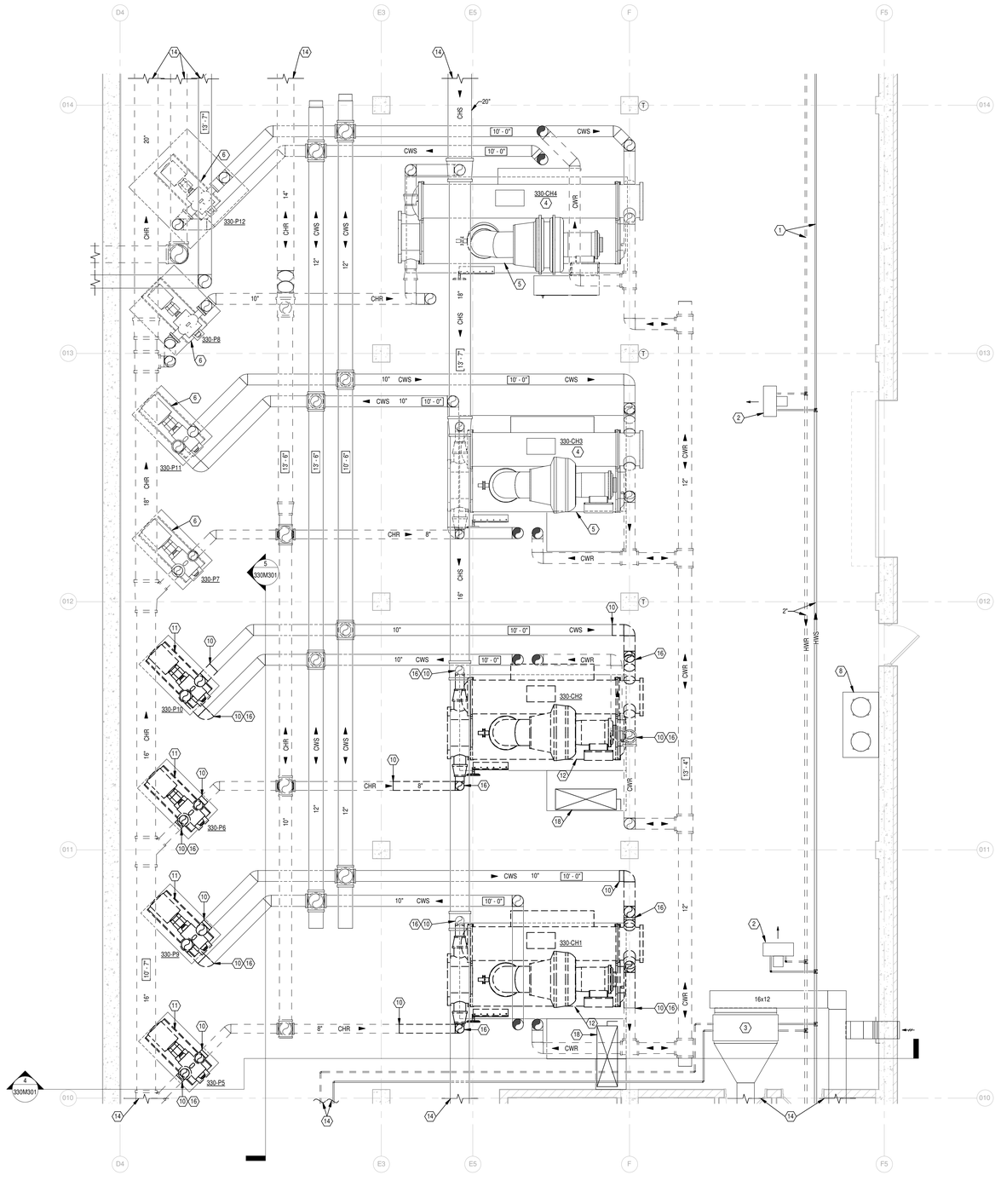
16 UNDER DEDUCT ALTERNATE #2 REUSE EXISTING SHUT OFF VALVES IN LIEU OF REPLACING.

17 EXISTING EXHAUST FAN TO REMAIN.

18 EXISTING ELECTRICAL STARTER CABINET.



2 **CHILLER PLANT - REMOVALS**
SCALE: 1/8" = 1'-0"



1 **ENLARGED CHILLER PLANT - REMOVALS**
SCALE: 1/4" = 1'-0"

Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: CHILLER PLANT FLOOR PLAN - REMOVALS

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014 | Checked: DLE | Drawn: PCW

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Project No. 2013-04014

Building Number: 330

Drawing Number: 330MD101

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Office of Construction and Facilities Management

Department of Veterans Affairs

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one-eighth inch = one foot | three-quarters inch = one foot | one-half inch = one foot | three-eighths inch = one foot | one-quarter inch = one foot | one inch = one foot | one and one-half inches = one foot | three inches = one foot

FULLY SPRINKLERED

GENERAL NOTES

A REFER TO SHEET 330M001 FOR LEGEND, ABBREVIATIONS AND ADDITIONAL GENERAL NOTES.

NOTES

1 EXISTING PIPING TO REMAIN.

2 EXISTING PROPELLER UNIT HEATER TO REMAIN.

3 EXISTING FAN COIL UNIT TO REMAIN.

4 EXISTING EXHAUST FAN TO REMAIN.

5 EXISTING CONCRETE HOUSEKEEPING PAD TO REMAIN.

6 EXISTING PUMP TO REMAIN.

7 EXISTING WATER FILTER TO REMAIN.

8 EXISTING COOLING TOWER CHEMICAL FEED SYSTEM TO REMAIN.

9 REFER TO 1/4" = 1'-0" SCALE PLAN ON THIS SHEET FOR MORE DETAIL OF WORK IN THIS AREA.

10 EXISTING AIR DEVICE TO REMAIN.

11 MODIFY EXISTING CONCRETE HOUSEKEEPING PAD AS REQUIRED TO ACCOMMODATE NEW EQUIPMENT. REFER TO DETAIL ON SHEET 330M501 FOR ADDITIONAL INFORMATION.

12 REFER TO 1/8"=1'-0" SCALE PLAN THIS SHEET FOR CONTINUATION.

13 RELOCATED MECHANICAL PIPE FITTING.

14 PROVIDE INSERTION TYPE FLOW METER IN PIPE AT THIS APPROXIMATE LOCATION. PROVIDE FULL PORT BALL VALVE AT TAP LOCATION. COORDINATE EXACT MOUNTING LOCATION, ARRANGEMENT, SPECIALTIES, ETC. WITH METER MANUFACTURER.

15 PROVIDE INLINE TYPE FLOW METER IN BYPASS PIPE AT THIS APPROXIMATE LOCATION. COORDINATE EXACT MOUNTING LOCATION, ARRANGEMENT, SPECIALTIES, ETC. WITH METER MANUFACTURER.

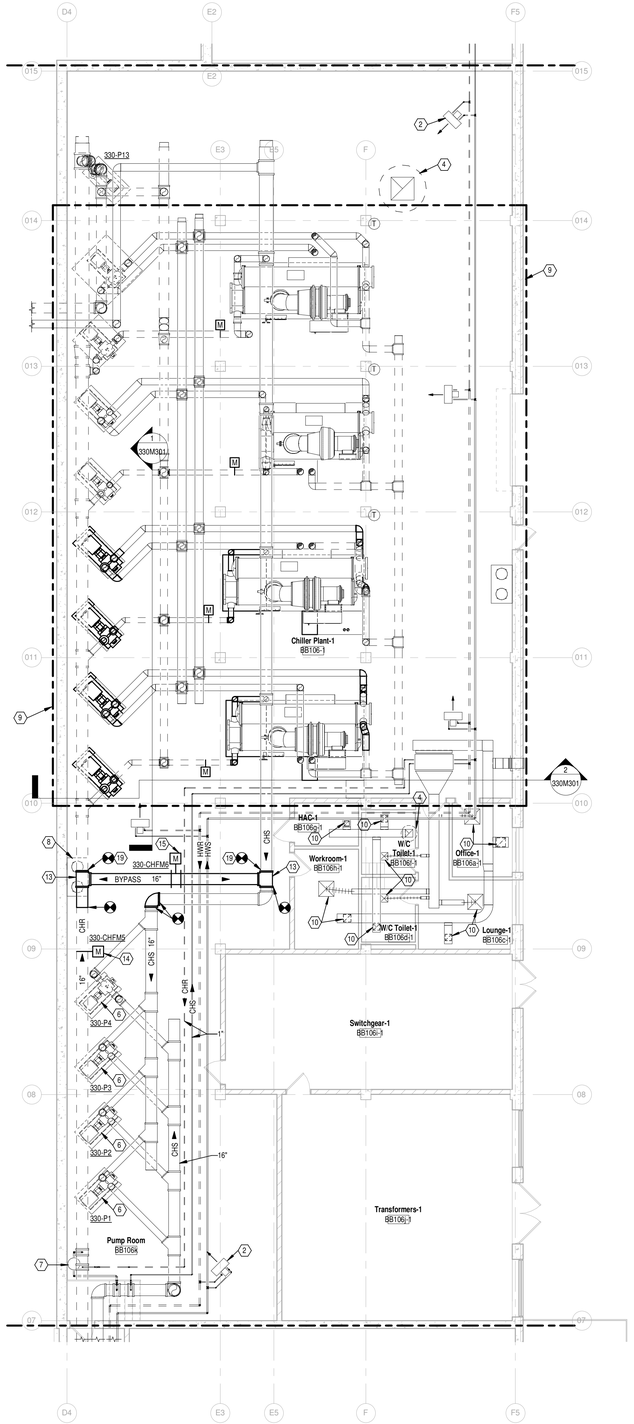
16 UNDER DEDUCT ALTERNATE #2 REUSE EXISTING SHUT OFF VALVES IN LIEU OF REPLACING.

17 EXISTING CHILLER TO REMAIN. PROVIDE UPGRADE TO EXISTING CHILLER PURGE SYSTEM TO LATEST TYPE. COORDINATE ALL NECESSARY REQUIREMENTS WITH CHILLER MANUFACTURER. OMIT THIS WORK UNDER DEDUCT ALTERNATE #1.

18 EXISTING UNDERGROUND CONDUITS STUB UP IN THIS APPROXIMATE LOCATION. COORDINATE EXACT LOCATION WITH ALL NEW CHILLER CLEARANCE REQUIREMENTS.

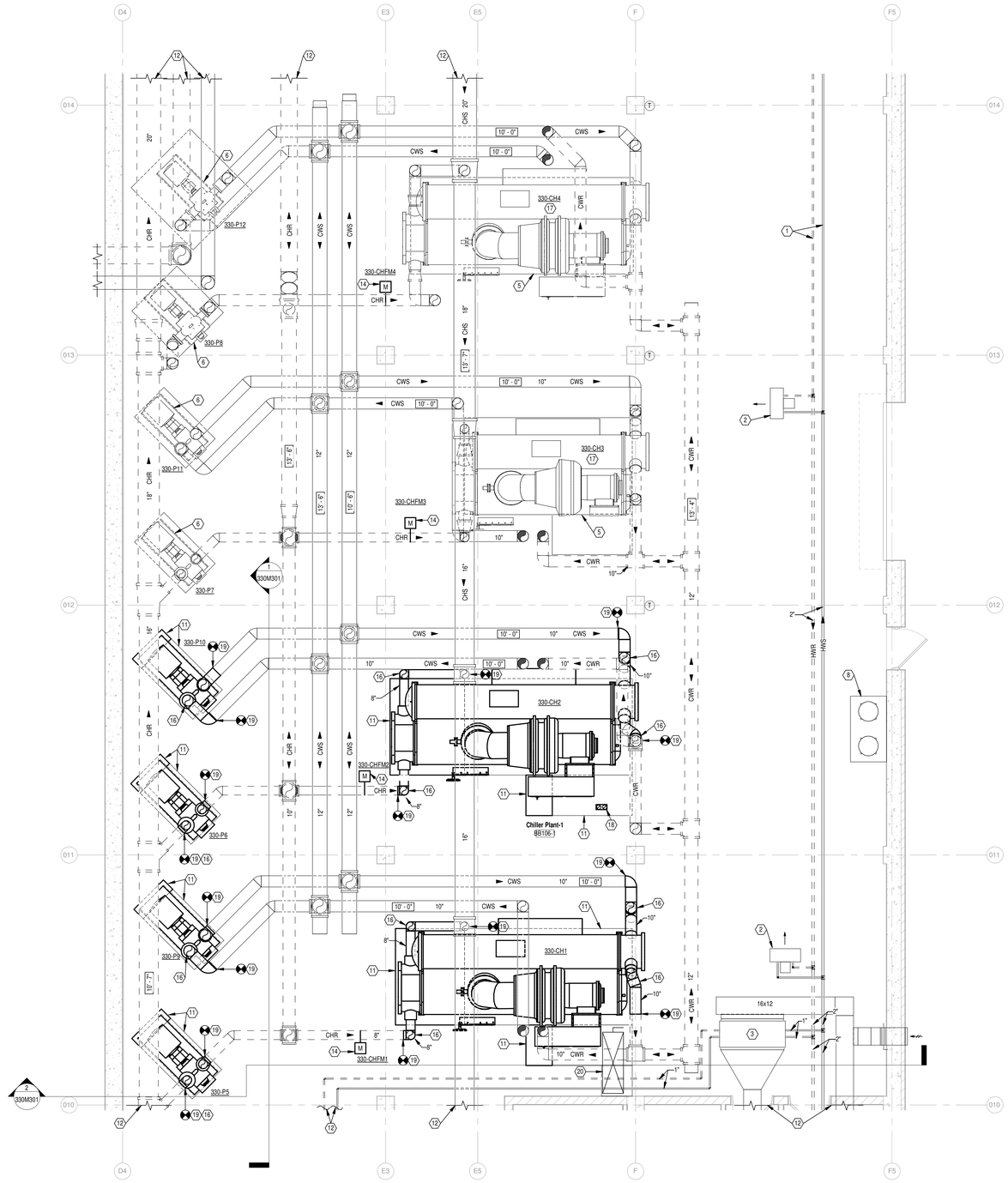
19 REUSE EXISTING REMOVED ELBOWS/FITTINGS IN NEW WORK. PROVIDE NEW GASKETS.

20 EXISTING ELECTRICAL STARTER CABINET. COORDINATE EXACT LOCATION WITH ALL NEW CHILLER CLEARANCE REQUIREMENTS.



2 CHILLER PLANT - NEW WORK

SCALE: 1/8" = 1'-0"



1 ENLARGED CHILLER PLANT - NEW WORK

SCALE: 1/4" = 1'-0"

Revisions	Date

CONSULTANTS:

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Drawing Title: CHILLER PLANT FLOOR PLAN - PIPING

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014 | Checked: DLE | Drawn: PCW

Project No. VA Project No. 552-15-203 / Project No. 2013-04014

Building Number: 330

Drawing Number: 330MP101

Dwg. of

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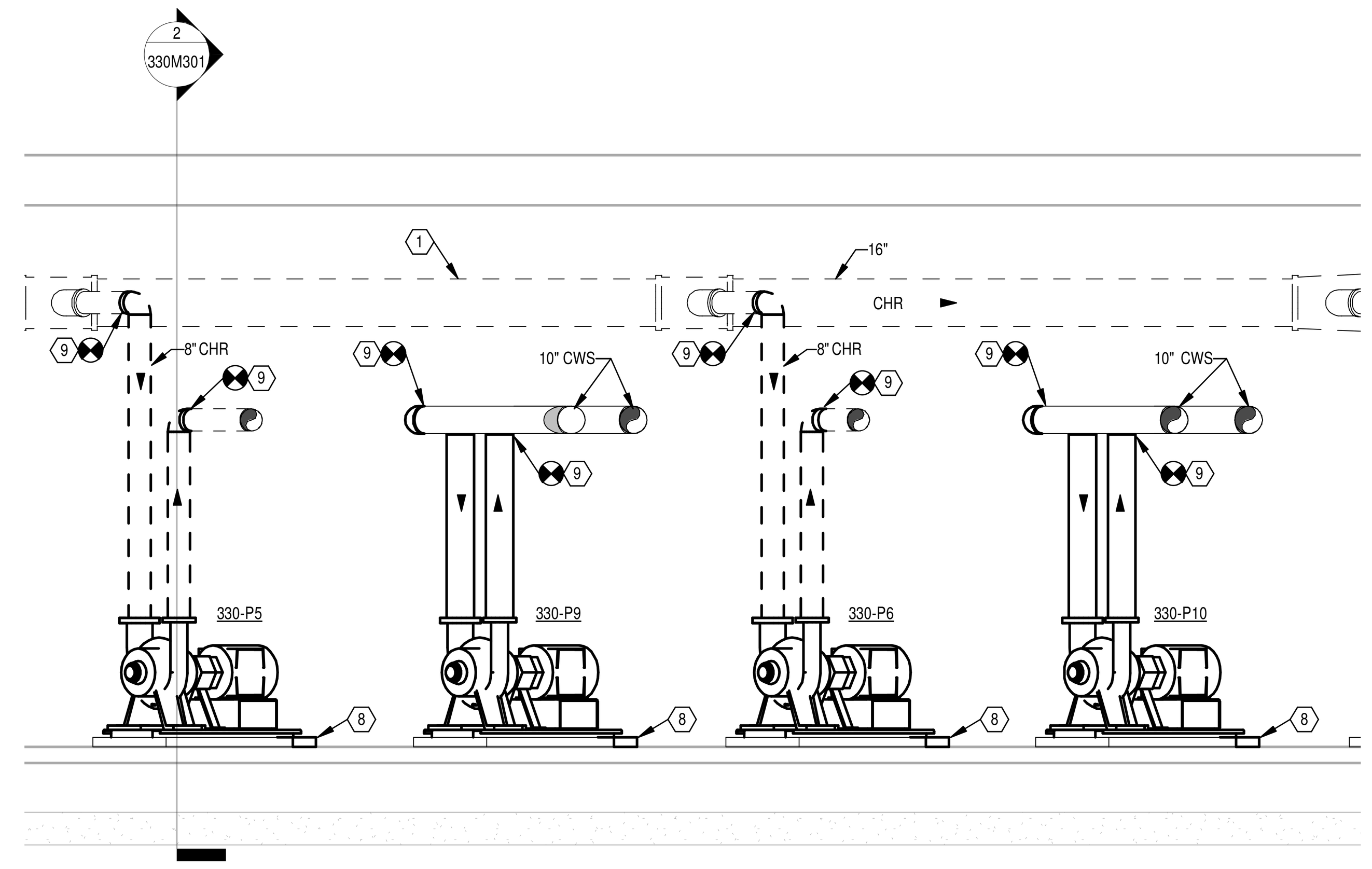
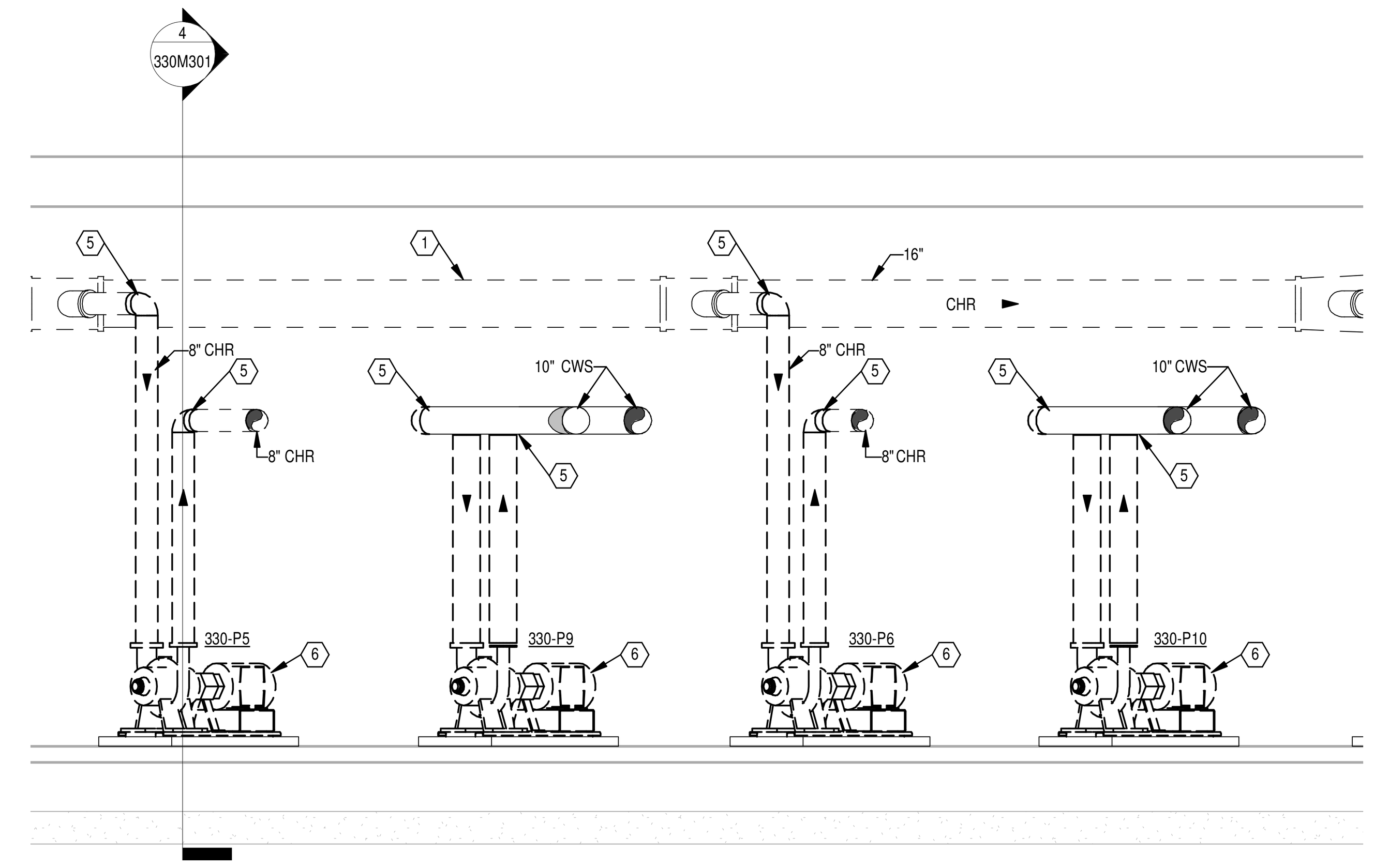
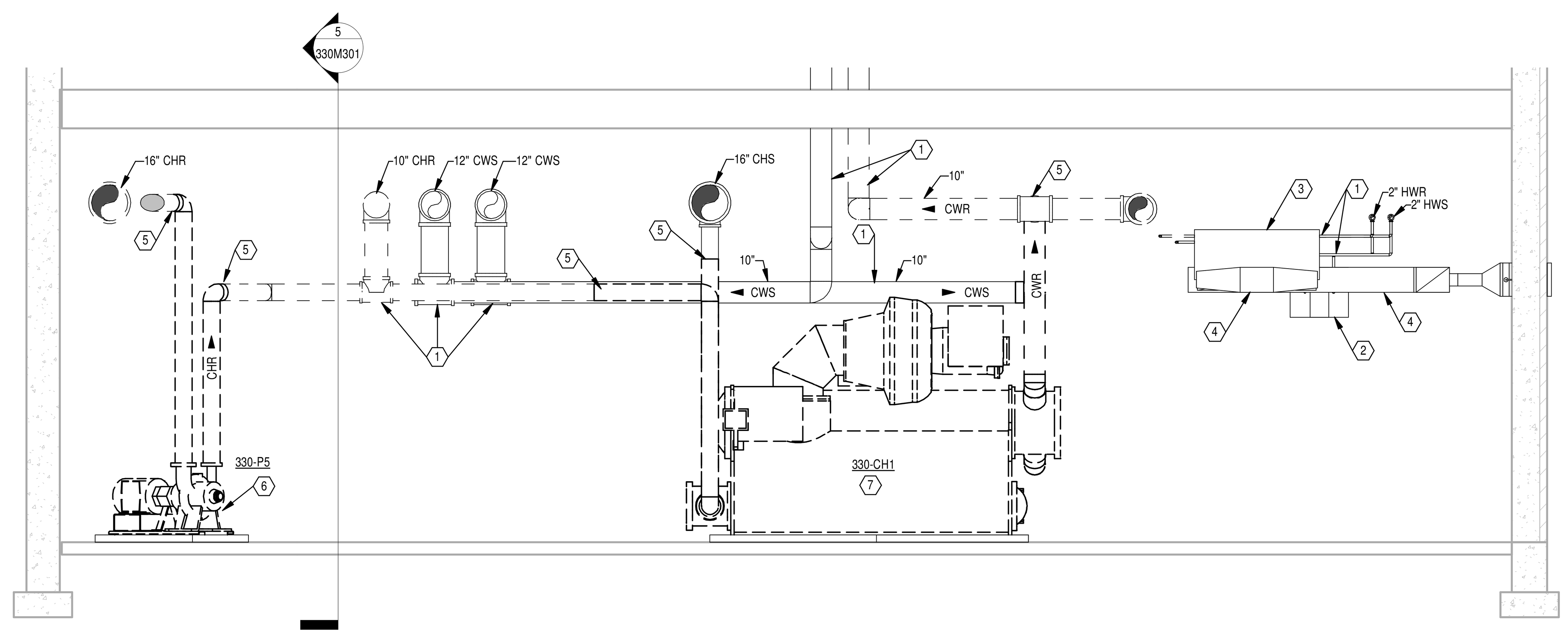


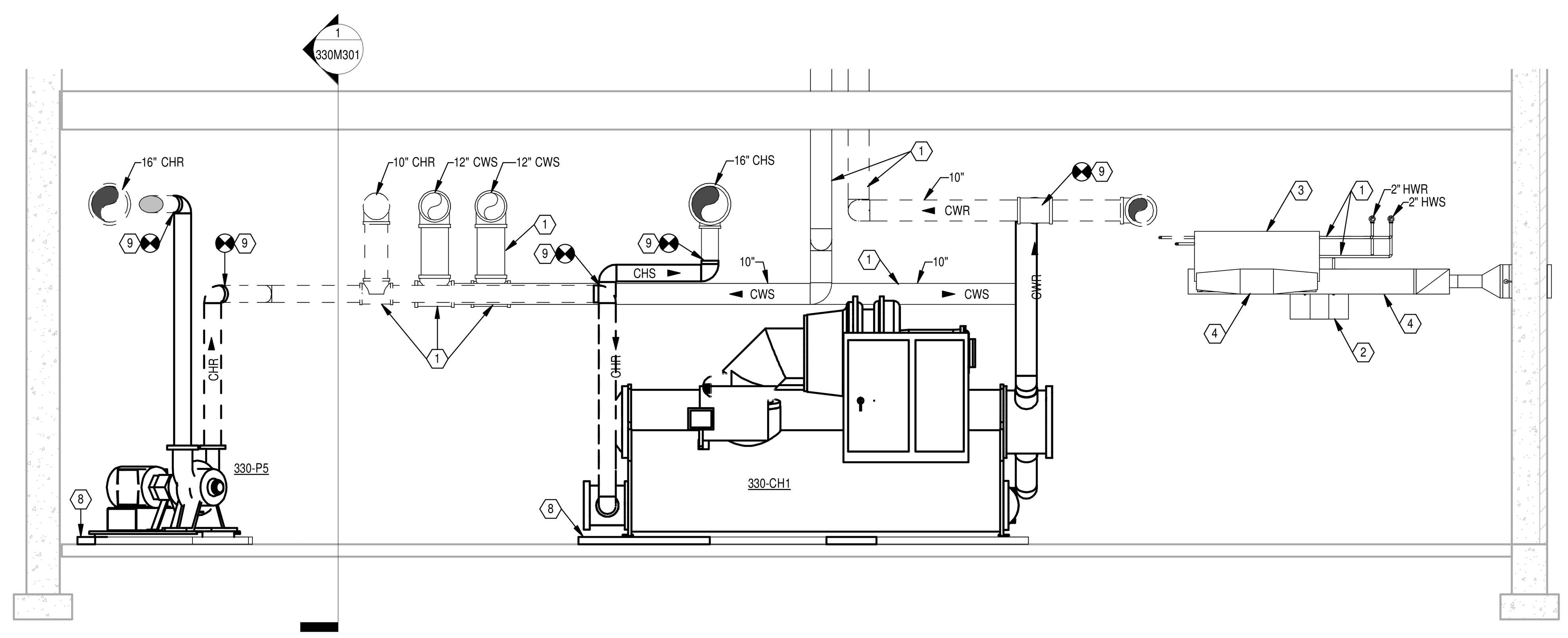
1 **PUMP NEW WORK**
SCALE: 1/4" = 1'-0"



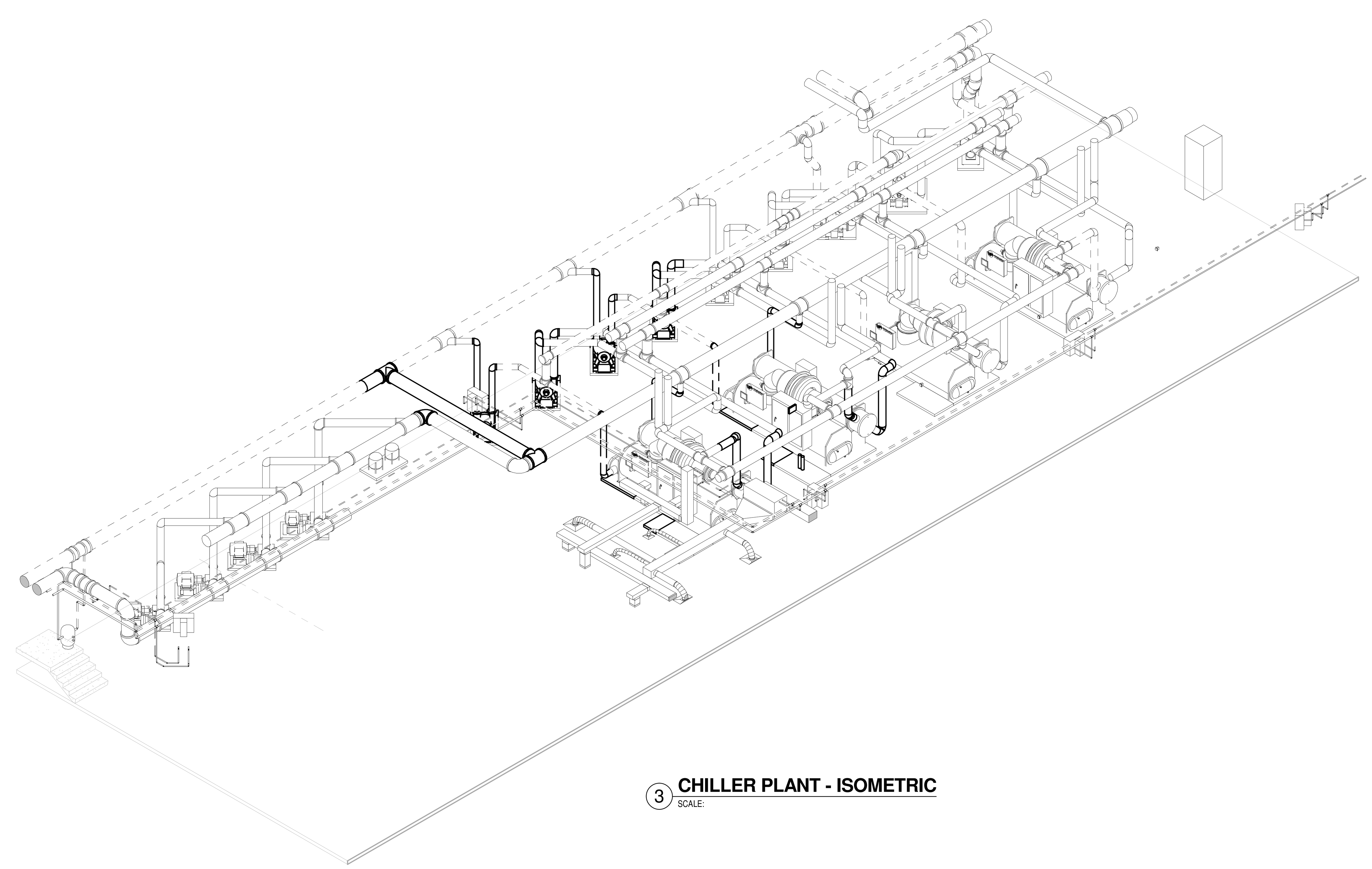
5 **PUMP REMOVALS**
SCALE: 1/4" = 1'-0"



4 **CHILLER REMOVALS**
SCALE: 1/4" = 1'-0"



2 **CHILLER NEW WORK**
SCALE: 1/4" = 1'-0"



3 **CHILLER PLANT - ISOMETRIC**
SCALE:

GENERAL NOTES

A REFER TO SHEET 330M001 FOR LEGEND, ABBREVIATIONS AND ADDITIONAL GENERAL NOTES.

⬡ NOTES

1 EXISTING PIPING TO REMAIN.

2 EXISTING PROPELLER UNIT HEATER TO REMAIN.

3 EXISTING FAN COIL UNIT TO REMAIN.

4 EXISTING DUCTWORK TO REMAIN.

5 REMOVE PIPING BACK TO THIS POINT FOR RECONNECTION IN NEW WORK. REUSE EXISTING PIPING ELBOWS/FITTINGS IN NEW WORK.

6 REMOVE EXISTING PUMP AND ASSOCIATED PIPING, VALVES, CONTROLS, ETC. CONCRETE HOUSEKEEPING PAD TO REMAIN.

7 REMOVE EXISTING CHILLER AND ASSOCIATED PIPING, VALVES, CONTROLS, ETC. CONCRETE HOUSEKEEPING PAD TO REMAIN.

8 MODIFY EXISTING CONCRETE HOUSEKEEPING PAD AS REQUIRED TO ACCOMMODATE NEW EQUIPMENT.

9 REUSE EXISTING REMOVED ELBOWS/FITTINGS IN NEW WORK. PROVIDE NEW GASKETS.

three inches = one foot
one and one-half inches = one foot
one inch = one foot
three-quarters inch = one foot
one-half inch = one foot
three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

6/3/2014 8:23:57 AM

Revisions		Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: SECTIONS & ISOMETRIC

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014
Checked: DLE
Drawn: PCW

Project No.
VA Project No. 552-15-203
Project No. 2013-04014

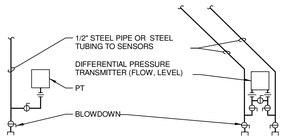
Building Number: 330

Drawing Number: 330M301

Dwg. of

Office of Construction and Facilities Management

Department of Veterans Affairs

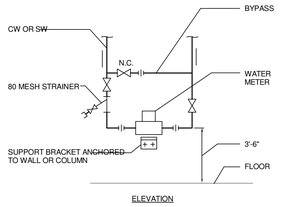


ELEVATION

NOTES:

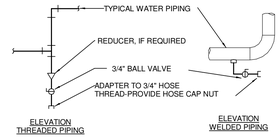
1. INSTALLATION OF SENSORS AND TRANSMITTERS SHALL CONFORM TO RECOMMENDATIONS OF MANUFACTURERS OF TRANSMITTERS.

PRESSURE TRANSMITTER INSTALLATION



ELEVATION

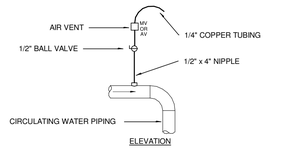
WATER METER INSTALLATION



TYPICAL CHILLED AND HOT WATER PIPING DRAIN VALVE CONNECTIONS

NOTES:
1. DRAIN ALL LOW POINTS AS INDICATED ABOVE.

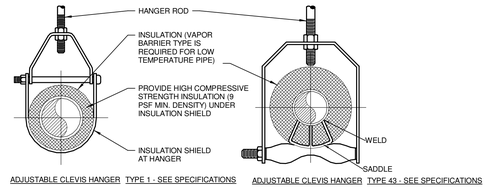
2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.



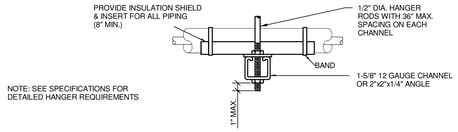
TYPICAL MANUAL AIR VENT

NOTES:
1. VENT ALL HIGH POINTS AS INDICATED ABOVE.
2. IF AUTOMATIC AIR VENTS ARE USED, PIPE DISCHARGE TO NEAREST DRAIN.

DRAIN VALVE AND AIR VENT CONNECTIONS (HYDRONIC SYSTEMS)



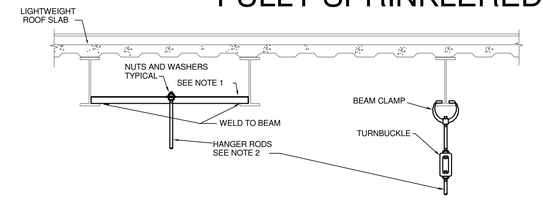
ADJUSTABLE CLEVIS HANGER TYPE 1 - SEE SPECIFICATIONS ADJUSTABLE CLEVIS HANGER TYPE 43 - SEE SPECIFICATIONS



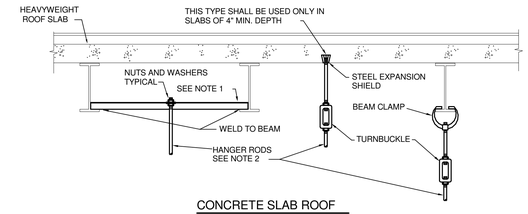
SIDE VIEW TRAPEZE HANGER FOR UP TO 1000 LB. UNIFORM LOAD

MAXIMUM PIPE/TUBING SUPPORT SPACING																	
NOM. SIZE IN.	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
PIPE FT.	7	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32
TUBING FT.	5 FT	6	7	8	8	9	10	12	13	14	16	-	-	-	-	-	-	-
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																		

PIPE HANGERS



METAL DECK ROOF

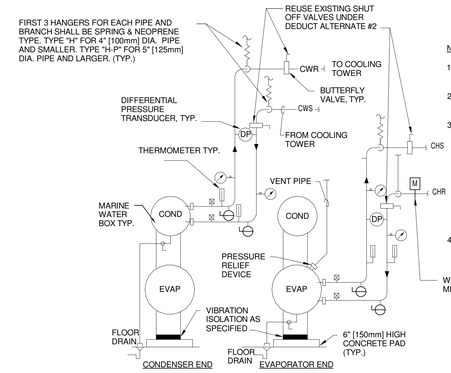


CONCRETE SLAB ROOF

NOTES:
1 FOR PIPES UNDER 2" IN SIZE, USE 1-1/2"x1-1/2"x1/4" ANGLE. FOR PIPES 2" TO 4" USE 3"x3"x1/4" ANGLE. ALL PIPES 5" AND LARGER USE 4"x4"x1/4" ANGLE.

2 HANGER ROD SIZES SHALL BE 3/8" FOR 3" AND SMALLER PIPE SIZES; 1/2" FOR 4" TO 6"; 5/8" FOR 8"; 3/4" FOR 10" AND 1" FOR 12" TO 16".

SECURING HANGER RODS IN CONCRETE



NOTE:

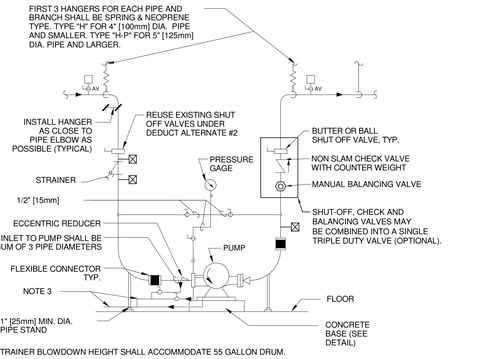
1. DRAIN ALL LOW POINTS OF SYSTEMS TO NEAREST FLOOR DRAIN.

2. PROVIDE MARINE WATER BOXES FOR BOTH CONDENSER AND EVAPORATOR.

3. COLLECT VENT PIPES FROM ALL REFRIGERANT PRESSURE RELIEF DEVICES AND EXTEND TO EXTERIOR OF BUILDING IN ACCORDANCE WITH ASHRAE STANDARD 15. HEADER SIZE TO EQUAL OR EXCEED TOTAL AREA OF DEVICES CONNECTED TO THE HEADER. PROVIDE PIPE MATERIALS, CONNECTION TYPE (INCLUDING FLEX CONNECTIONS), DRAIN POINTS, ETC. PER MANUFACTURER'S RECOMMENDATIONS AND ASHRAE STANDARD 15.

4. PROVIDE P/T TEST PLUGS ADJACENT TO ALL DDC SENSORS AND GAUGES.

WATER COOLED CHILLER PIPING CONNECTIONS



NOTE:

1. Y TYPE STRAINER BLOWDOWN HEIGHT SHALL ACCOMMODATE 55 GALLON DRUM.

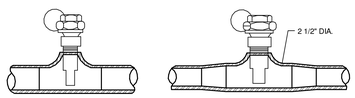
2. PUMP INSTALLATION IS DIAGRAMMATIC AND INTENDED TO SHOW THE MAJOR COMPONENTS REQUIRED FOR INSTALLATION. THE INSTALLED PIPING CONFIGURATION SHALL BE BASED ON THE ACTUAL PUMP PROVIDED. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A COORDINATION DRAWING SHOWING PUMP, PIPING, AND ACCESSORIES AS REQUIRED BY THIS INSTALLATION DETAIL.

3. ALL PAD, PUMP, AND PIPING DRAINS SHALL BE HARD PIPED TO NEAREST FLOOR DRAIN, TYPICAL.

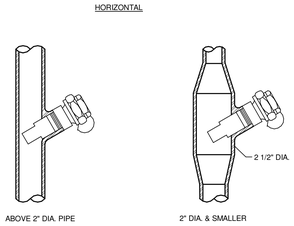
4. PROVIDE P/T TEST PLUGS ADJACENT TO ALL DDC SENSORS AND GAUGES.

(HORIZONTAL SPLIT CASE SHOWN, VERTICAL SPLIT CASE SIMILAR)

SPLIT CASE PUMP FLEXIBLE CONNECTORS

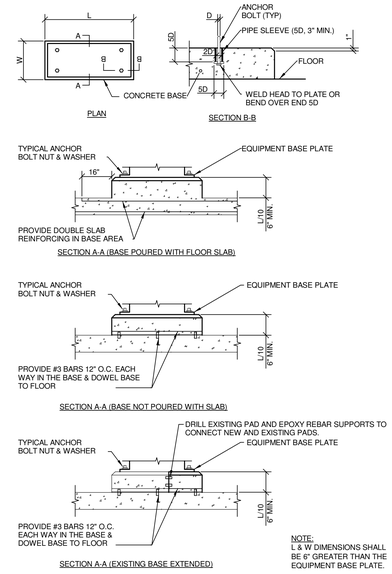


HORIZONTAL



VERTICAL

INSTALLATION OF THERMOMETER WELLS



NOTE:
L & W DIMENSIONS SHALL BE 6" GREATER THAN THE EQUIPMENT BASE PLATE.

CONCRETE EQUIPMENT BASES

Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: DETAILS

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014 | Checked: DLE | Drawn: PCW

Project No.
VA Project No. 552-15-203
Project No. 2013-04014

Building Number: 330

Drawing Number: 330M501

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Department of Veterans Affairs

6/3/2014 8:23:57 AM

FULLY SPRINKLERED

HVAC DESIGN DATA

OUTDOOR DESIGN TEMPERATURES — 90.3 DEG. F Db SUMMER; 73.6 DEG. F Wb SUMMER; 0.6 DEG. F Db WINTER

DESIGN ALTITUDE: 1004 FT.

HVAC PUMP SCHEDULE

PUMP NO.	LOCATION	DESCRIPTION	CIRCULATING FLUID					% EFF.	TYPE	MOTOR			VFD	REMARKS
			FLUID	GPM	PUMP HEAD FT. FLUID	TEMP °F	SP. GR.			NOM. HP	VOLT.-PHASE	RPM		
330-P5	BUILDING 330	PRIMARY/CHILLED WATER PUMP	WATER	1,200	30	44	1	77	VERTICAL SPLIT CASE	15	460-3	1750	NO	1
330-P6	BUILDING 330	PRIMARY/CHILLED WATER PUMP	WATER	1,200	30	44	1	77	VERTICAL SPLIT CASE	15	460-3	1750	NO	1
330-P9	BUILDING 330	CONDENSER WATER PUMP	WATER	2,000	50	85	1	76	VERTICAL SPLIT CASE	40	460-3	1750	NO	1
330-P10	BUILDING 330	CONDENSER WATER PUMP	WATER	2,000	50	85	1	76	VERTICAL SPLIT CASE	40	460-3	1750	NO	1

NOTES:
1 MOTOR SHALL BE ENERGY EFFICIENT TYPE.

WATER COOLED CHILLER SCHEDULE

UNIT NO.	LOCATION	AREA AND/OR BLDG SERVED	TYPE	CAPACITY (TONS)	MAX KW/TON	MIN COP	MAX NPLV (KW/TON)	EVAPORATOR					CONDENSER					ELECTRICAL					NOTES
								FLOW (GPM)	EWT (°F)	LWT (°F)	MAX WPD (FT)	FOULING FACTOR	FLOW (GPM)	EWT (°F)	LWT (°F)	MAX WPD (FT)	FOULING FACTOR	POWER MCA	MOCP	PHASE	VOLT	SPEED CONTROL	
330-CH1	BLDG 330	VA CAMPUS	CENTRIFUGAL	700	0.560	6.3	0.360	1,200	58	44	11.6	0.00010	2,000	85	94.4	18.9	0.00025	665	1000	3	480	VARIABLE	1,2,3
330-CH2	BLDG 330	VA CAMPUS	CENTRIFUGAL	700	0.560	6.3	0.360	1,200	58	44	11.6	0.00010	2,000	85	94.4	18.9	0.00025	665	1000	3	480	VARIABLE	1,2,3

NOTES:
1 SEE SPECIFICATIONS FOR OTHER APPLICABLE ENGINEERING REQUIREMENTS.
2 "MAX KW/TON" AND "MIN COP" SPECIFIED ARE AT DESIGN CONDITION INDICATED.
3 CHILLER SHALL INCLUDE A SINGLE POINT POWER CONNECTION.

ELECTROMAGNETIC METER SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	FLUID TEMP ° F	ACCURATE FLOW RANGE FPS	MIN ACCURACY [%]	OUTPUT SIGNAL	PIPE SIZE	METER HEAD MOUNTING LOCATION	PIPE MATERIAL	MOUNTING STYLE	NOTES
330-CHFM1	BUILDING 330 CHILLER PLANT ROOM	CHILLED WATER RETURN PIPE TO 330-CH1	40	2-20	±1	4-20mA AND PULSE	8"	UNIT	SCHEDULE 40 STEEL	INSERTION	2,3,4
330-CHFM2	BUILDING 330 CHILLER PLANT ROOM	CHILLED WATER RETURN PIPE TO 330-CH2	40	2-20	±1	4-20mA AND PULSE	8"	UNIT	SCHEDULE 40 STEEL	INSERTION	2,3,4
330-CHFM3	BUILDING 330 CHILLER PLANT ROOM	CHILLED WATER RETURN PIPE TO 330-CH3	40	2-20	±1	4-20mA AND PULSE	8"	UNIT	SCHEDULE 40 STEEL	INSERTION	2,3,4
330-CHFM4	BUILDING 330 CHILLER PLANT ROOM	CHILLED WATER RETURN PIPE TO 330-CH4	40	2-20	±1	4-20mA AND PULSE	8"	UNIT	SCHEDULE 40 STEEL	INSERTION	2,3,4
330-CHFM5	BUILDING 330 CHILLER PLANT ROOM	SECONDARY CHILLED WATER RETURN PIPE	40	2-20	±1	4-20mA AND PULSE	16"	UNIT	SCHEDULE 40 STEEL	INSERTION	2,3,4
330-CHFM6	BUILDING 330 CHILLER PLANT ROOM	CHILLED WATER DECOUPLER PIPE	40	3-33	±0.4	4-20mA AND PULSE	16"	UNIT	SCHEDULE 40 STEEL	FULL BORE	1,2,3

NOTES:
1 METERS SHALL BE FULL SIZE OF PIPE.
2 CONTRACTOR SHALL FIELD VERIFY PIPE SIZES, CONNECTION TYPES, (FLANGED, THREADED, ETC.) AND PIPING MATERIALS (STEEL, COPPER, ETC.), PRIOR TO FINALIZING SHOP DRAWINGS.
3 CONTRACTOR SHALL COORDINATE POWER & SIGNAL REQUIREMENTS WITH METER MANUFACTURER.
4 PROVIDE FULL PORT BALL VALVE AND ALL ADDITIONAL SPECIALTIES FOR A COMPLETE INSTALLATION. COORDINATE EXACT INSTALLATION REQUIREMENTS WITH METER MANUFACTURER.

A three inches = one foot
B one and one-half inches = one foot
C one inch = one foot
D three-quarters inch = one foot
E one-half inch = one foot
F three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

Revisions | Date

6/3/2014 8:23:58 AM

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: SCHEDULES

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014 | Checked: DLE | Drawn: PCW

Project No.
VA Project No. 552-15-203
Project No. 2013-04014

Building Number: 330

Drawing Number: 330M601

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Office of Construction and Facilities Management
Department of Veterans Affairs

FULLY SPRINKLERED

CHILLED WATER SYSTEM CONTROL

1.1 GENERAL

A. NEW CHILLED WATER PLANT EQUIPMENT

1. THIS PROJECT INCLUDES THE REPLACEMENT OF THE EXISTING CHILLERS CH1 AND CH2; AND THE REPLACEMENT OF THE ASSOCIATED CHILLED WATER AND CONDENSER WATER PUMPS. EXTEND AND MODIFY THE EXISTING TRIDIUM NIAGARA AX DDC SYSTEM TO PICK UP AND INCORPORATE THE NEW EQUIPMENT AND CONTROL SEQUENCES AS AN UPGRADE AND EXTENSION OF THE EXISTING CONTROL SYSTEM.

1.2 CHILLED WATER PLANT

A. WATER CHILLERS

1. THE WATER CHILLER SYSTEM SHALL BE ENABLED THRU THE DDC CONTROL SYSTEM. WHENEVER THE OUTSIDE AIR TEMPERATURE IS ABOVE 55 DEGREES F. (ADJUSTABLE), AND SHALL RUN CONTINUOUSLY UNTIL THE OUTSIDE AIR TEMPERATURE FALLS BELOW 52 DEGREES F. FOR MORE THAN 4 HOURS (ADJUSTABLE).
2. ALL SAFETY INTERLOCKS ASSOCIATED WITH THE CHILLED WATER SYSTEM SHALL BE HARD WIRED. SOFTWARE INTERLOCKS ARE ACCEPTABLE AS SECONDARY ADDITIONAL SAFETIES ONLY.
3. THE CAPACITY CONTROL OF EACH CHILLER TO MAINTAIN SUPPLY WATER TEMPERATURE SETPOINT SHALL BE CONTROLLED BY THE CHILLER MANUFACTURERS FACTORY MOUNTED CHILLER CONTROLLER. THE SUPPLY CHILLED WATER TEMPERATURE SETPOINT SHALL BE GIVEN BY THE BUILDING AUTOMATION SYSTEM (BAS)
4. THE BAS SHALL ENABLE CHILLERS AND PUMPS IN SEQUENCE TO PROVIDE STAGING AND LEAD/LAG CONTROL OF THE CHILLERS. THE FIRST (LEAD) CHILLER, ITS PRIMARY PUMP, AND THE LEAD SECONDARY PUMP SHALL BE COMMANDED FROM THE BAS BASED ON OUTSIDE AIR TEMPERATURE. THE LEAD CHILLER SHALL MODULATE TO THE MOST EFFICIENT COOLING SETPOINT BEFORE THE LAG CHILLER AND ITS PRIMARY PUMP ARE STAGED ON. THE LEAD CHILLER DESIGNATION SHALL ALTERNATE BETWEEN ALL CHILLERS TO PROVIDE WEEKLY EQUAL OPERATION OF THE CHILLERS.
5. THE LAG CHILLER AND ITS PRIMARY PUMP SHALL BE STAGED ON WHEN THE LEAD CHILLER CANNOT MAINTAIN SECONDARY SUPPLY WATER TEMPERATURE SETPOINT OVER A 10 MINUTE PERIOD (ADJUSTABLE) AND THE BI-DIRECTIONAL FLOW METER IN THE BY-PASS PIPE IS INDICATING THAT THE SECONDARY FLOW IS BY-PASSING THE PLANT. EXISTING SUPPLY WATER TEMPERATURE SENSORS ARE LOCATED IN EACH PRIMARY CHILLER LOOP (FOR INFORMATION ONLY) AND DOWNSTREAM OF SECONDARY PUMP IN THE SECONDARY LOOP (FOR ACTIVE CONTROL). THE REMAINING CHILLERS AND PRIMARY PUMPS SHALL BE STAGED ON IN THE SAME MANNER AS DESCRIBED ABOVE.
6. LAG CHILLERS AND PRIMARY PUMPS SHALL BE SHUT DOWN AS FOLLOWS: WITH FOUR CHILLERS OPERATING; WHEN FLOW IN THE SECONDARY LOOP IS LESS THAN 75% OF THE TOTAL FLOW IN THE PRIMARY LOOP AND THE BI-DIRECTIONAL FLOW METER IN THE BY-PASS PIPE IS INDICATING THAT THE PRIMARY FLOW IS BY-PASSING THE BUILDING LOOP, THE THIRD LAG CHILLER AND ASSOCIATED PRIMARY PUMP SHALL STOP. WITH THREE CHILLERS OPERATING; WHEN FLOW IN THE SECONDARY LOOP IS LESS THAN 66% OF THE TOTAL FLOW IN THE PRIMARY LOOP AND THE BI-DIRECTIONAL FLOW METER IN THE BY-PASS PIPE IS INDICATING THAT THE PRIMARY FLOW IS BY-PASSING THE BUILDING LOOP, THE SECOND LAG CHILLER AND ASSOCIATED PRIMARY PUMP SHALL STOP. WITH TWO CHILLERS OPERATING; WHEN FLOW IN THE SECONDARY LOOP IS LESS THAN 50% OF THE TOTAL FLOW IN THE PRIMARY LOOP AND THE BI-DIRECTIONAL FLOW METER IN THE BY-PASS PIPE IS INDICATING THAT THE PRIMARY FLOW IS BY-PASSING THE BUILDING LOOP, THE FIRST LAG CHILLER AND ASSOCIATED PRIMARY PUMP SHALL STOP
7. THE CHILLER SUPPLIER SHALL FURNISH CONTROLLERS THAT CAN COMMUNICATE BACNET OVER ETHERNET WITH THE BAS. THE SETUP AND PROGRAMMING OF THE CHILLER CONTROLS SHALL BE BY THE CHILLER SUPPLIER, COORDINATED WITH THE BAS.
8. CONTROL & MONITORING POINTS FOR EACH NEW CHILLER SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING AND COMMUNICATED WITH THE BAS:

   A. CHILLERS ON/OFF FLOW SWITCH STATUS (DO/ DI)
   B. CHILLER ALARMS (GA)
   C. FLOW METER (AI)
   D. CHILLER WATER RETURN TEMPERATURE (AI)
   E. CHILLER WATER SUPPLY TEMPERATURE (AI/ LL/ HL)
   F. CHILLED WATER PRIMARY PUMP ON/OFF FLOW STATUS (DO/ DI)
   G. CONDENSER WATER ISOLATION VALVE (DO)
   H. SECONDARY CHILLED WATER RETURN TEMPERATURE (AI)
   I. SECONDARY CHILLED WATER SUPPLY TEMPERATURE (AI)
   J. REFRIGERANT MONITOR ALARMS (GA)
   K. CHILLER RUNTIME (DI)
   L. CONDENSER WATER RETURN TEMPERATURE (AI)
   M. CONDENSER WATER SUPPLY TEMPERATURE (AI)
   N. CONDENSER WATER PUMP ON/OFF STATUS (DO/ DI)
   O. OIL PRESSURE
   P. OIL TEMPERATURE
   Q. EVAPORATION APPROACH
   R. CONDENSER APPROACH
   S. PRESSURE DROP ACROSS THE EVAPORATOR
   T. PRESSURE DROP ACROSS THE CONDENSOR
   U. VANE POSITION
   V. KILOWATT USAGE

1.3 PUMPS

A. PRIMARY CHILLED WATER PUMPS

1. A CHILLER'S PRIMARY CHILLED WATER PUMP SHALL START BASED UPON A SIGNAL FROM ITS RESPECTIVE CHILLER CONTROL PANEL. THE CHILLERS ASSOCIATED DIFFERENTIAL PRESSURE SWITCHES IN THE CHILLED WATER AND CONDENSER WATER PIPING SHALL ENABLE THE CHILLER TO START ONCE FLOW HAS BEEN PROVEN THROUGH THE CONDENSER AND EVAPORATOR SECTIONS. A SEPARATE DEDICATED PRIMARY PUMP IS ASSOCIATED WITH EACH CHILLER. WHEN A CHILLER IS COMMANDED TO SHUTDOWN, ITS PRIMARY PUMP SHALL CONTINUE TO RUN FOR 5 MINUTES (ADJUSTABLE) BEFORE STOPPING.
2. DDC CONTROL & MONITORING POINTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

   A. CHILLED WATER PUMP STATUS VIA DIFFERENTIAL PRESSURE SWITCH (DI)
   B. CHILLED WATER PUMPS HOURS OF OPERATION

B. SECONDARY CHILLED WATER PUMPS

1. THE CHILLED WATER SYSTEM SHALL BE ENABLED VIA THE DDC SYSTEM WHEN ANY CHILLER IS RUNNING.
2. THE DDC CONTROLLER SHALL AUTOMATICALLY ACTIVATE A LAG SECONDARY PUMP WHEN THE LEAD PUMP FAILS AFTER A 30 SECOND TIME DELAY. PROVIDE LEAD/LAG CAPABILITY WITH BAS SOFTWARE TO ALTERNATE THE SECONDARY PUMP SEQUENCE.
3. THE LEAD PUMP SHALL START 30 SECONDS (ADJUSTABLE) AFTER THE LEAD PRIMARY CHILLED WATER PUMP STARTS. THREE SYSTEM DIFFERENTIAL PRESSURE TRANSMITTERS (EXISTING) LOCATED OUT IN THE SYSTEM SHALL MODULATE CHILLED WATER PUMP VARIABLE SPEED MOTOR CONTROLLERS TO MAINTAIN SETPOINT. EACH SENSOR SHALL BE SATISFIED AT ALL TIME. THE SPEED OF THE PUMP SHALL BE CONTROLLED TO MAINTAIN 23 FT.HD. (10 PSIG) ACROSS THE SUPPLY AND RETURN AT THE CONTROL POINT. IF THE LEAD PUMP EXCEEDS 80% (ADJUSTABLE) OF IT'S FULL SPEED, THE FIRST LAG PUMP SHALL START AND THE PUMPS SHALL BE CONTROLLED IN UNISON. IF THE TWO PUMPS EXCEED 80% (ADJUSTABLE) OF THEIR FULL SPEED, THE SECOND LAG PUMP SHALL START AND THE THREE PUMPS SHALL BE CONTROLLED IN UNISON.
4. IF THE OPERATING SPEED OF THE THREE PUMPS FALLS BELOW THEIR MINIMUM SPEED (30% ADJUSTABLE) THE PUMP THAT HAS BEEN OPERATING THE LONGEST SHALL STOP AND THE REMAINING PUMPS SHALL OPERATE IN UNISON. A FIVE MINUTE OFF TIME DELAY SHALL PERMIT THE OPERATING PUMP SPEEDS TO STABILIZE BEFORE THE SEQUENCE REPEATS. IF THE OPERATING SPEED OF THE TWO PUMPS FALLS BELOW THEIR MINIMUM SPEED (30% ADJUSTABLE) THE PUMP THAT HAS BEEN OPERATING THE LONTEST SHALL STOP. A FIVE MINUTE OFF TIME DELAY SHALL PERMIT THE LEAD PUMP SPEED TO STABILIZE BEFORE THE SEQUENCE REPEATS.
5. CONTROL & MONITORING POINTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

   A. PUMPS ON/OFF AND VFD RUN STATUS INDICATION (DO/ DI)
   B. HOURS OF OPERATION (DI)
   C. PUMP VFD SPEED CONTROLLER (% MAX. SPEED) (AO)
   D. BUILDING WATER DIFFERENTIAL PRESSURE (AI/ LL/ HL)
   E. BTU FLOW METER
   F. TEMPERATURE SENSORS

C. CONDENSER WATER PUMPS

1. THE CONDENSER WATER PUMP CONTROL IS EXISTING TO REMAIN EXCEPT THAT THE NEW CHILLERS MUST INTERLOCK WITH EXISTING PUMPS. EXTEND WIRING FROM NEW CHILLER CONTROL PANELS TO EXISTING CONDENSER WATER PUMP STARTERS.
2. CONTROL & MONITORING POINTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

   A. PUMPS ON/OFF AND RUN INDICATION STATUS (DO/ DI)
   B. HOURS OF OPERATION (DI)

1.4 COOLING TOWERS

A. GENERAL

1. EXISTING CONTROLS TO REMAIN.

1.5 EXHAUST FANS AND REFRIGERANT MONITORING

A. CONTROLS AND MONITORING

1. EXISTING CONTROLS TO REMAIN

EXISTING CHILLED WATER POINTS LIST

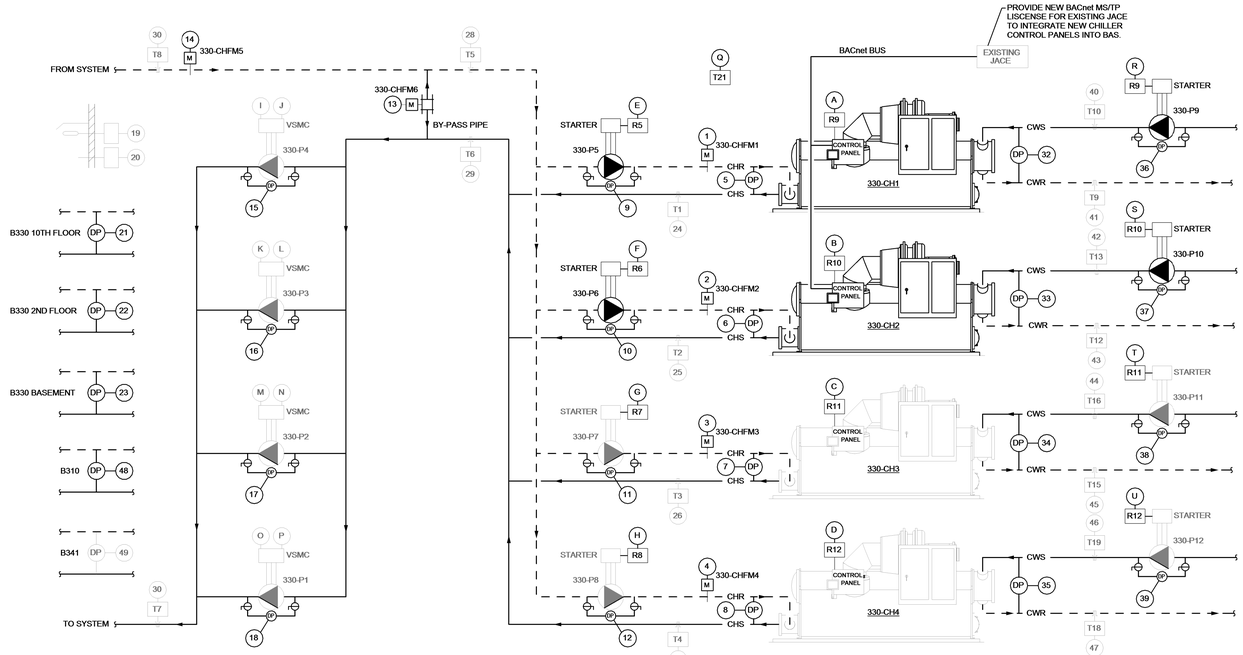
	POINT ID	DEVICE TAG	DEVICE DESCRIPTION	POINT TYPE DI	DO	AI	AO
*	1	M	330-CH1 CHILLED WATER FLOW METER			X	
*	2	M	330-CH2 CHILLED WATER FLOW METER			X	
*	3	M	330-CH3 CHILLED WATER FLOW METER			X	
*	4	M	330-CH4 CHILLED WATER FLOW METER			X	
*	5	DP	330-CH1 CHILLED WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	6	DP	330-CH2 CHILLED WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	7	DP	330-CH3 CHILLED WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	8	DP	330-CH4 CHILLED WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	9	DP	330-P5 PRIMARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	10	DP	330-P6 PRIMARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	11	DP	330-P7 PRIMARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	12	DP	330-P8 PRIMARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	13	M	CHILLED WATER BY-PASS PIPE FLOW			X	
*	14	M	SECONDARY CHILLED WATER RETURN FLOW			X	
*	15	DP	330-P4 SECONDARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	16	DP	330-P3 SECONDARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	16	DP	330-P2 SECONDARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
*	18	DP	330-P1 SECONDARY CHILLED WATER PUMP DIFFERENTIAL PRESSURE	X			
	19	T21	OUTDOOR AIR TEMPERATURE (EXISTING)			X	
	20	H1	OUTDOOR AIR HUMIDITY (EXISTING)			X	
*	21	DP	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE			X	
*	22	DP	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE			X	
*	23	DP	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE			X	
	24	T1	330-CH1 CHILLED WATER SUPPLY TEMPERTURE (EXISTING)			X	
	25	T2	330-CH2 CHILLED WATER SUPPLY TEMPERATURE (EXISTING)			X	
	26	T3	330-CH3 CHILLED WATER SUPPLY TEMPERATURE (EXISTING)			X	
	27	T4	330-CH4 CHILLED WATER SUPPLY TEMPERATURE (EXISTING)			X	
	28	T5	PRIMARY CHILLED WATER RETURN TEMPERATURE (EXISTING)			X	
	29	T6	PRIMARY CHILLED WATER SUPPLY TEMPERATURE (EXISTING)			X	
	30	T7	SECONDARY CHILLED WATER SUPPLY TEMPERATURE (EXISTING)			X	
	31	T8	SECONCARY CHILLED WATER RETURN TEMPERATURE (EXISTING)			X	
*	32	DP	330-CH1 CONDENSER WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	33	DP	330-CH2 CONDENSER WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	34	DP	330-CH3 CONDENSER WATER DIFFERENTIAL PRESSURE SWITCH	X			
*	35	DP	330-CH4 CONDENSER WATER DIFFERENTIAL PRESSURE SWITCH	X			

* INDICATES DEVICE REPLACEMENT, REFER TO SCHEMATIC FOR ADDITIONAL INFORMATION.

EXISTING CHILLED WATER POINTS LIST

	POINT ID	DEVICE TAG	DEVICE DESCRIPTION	POINT TYPE DI	DO	AI	AO
*	36	DP	330-P9 CONDENSER WATER PUMP DIFFERENTIAL PRESSURE	X			
*	37	DP	330-P10 CONDENSER WATER PUMP DIFFERENTIAL PRESSURE	X			
*	38	DP	330-P11 CONDENSER WATER PUMP DIFFERENTIAL PRESSURE	X			
*	39	DP	330-P12 CONDENSER WATER PUMP DIFFERENTIAL PRESSURE	X			
	40	T10	330-CH1 CONDENSER WATER SUPPLY TEMPERATURE (EXISTING)				X
	41	T9	330-CH1 CONDENSER WATER RETURN TEMPERATURE (EXISTING)				X
	42	T13	330-CH2 CONDENSER WATER SUPPLY TEMPERATURE (EXISTING)				X
	43	T12	330-CH2 CONDENSER WATER RETURN TEMPERATURE (EXISTING)				X
	44	T16	330-CH3 CONDENSER WATER SUPPLY TEMPERATURE (EXISTING)				X
	45	T15	330-CH3 CONDENSER WATER RETURN TEMPERATURE (EXISTING)				X
	46	T19	330-CH4 CONDENSER WATER SUPPLY TEMPERATURE (EXISTING)				X
	47	T18	330-CH4 CONDENSER WATER RETURN TEMPERATURE (EXISTING)				X
*	48	DP	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE				X
	49	DP	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE (EXISTING)				X
*	A	R9	330-CH1 CHILLER START/STOP			X	
*	B	R10	330-CH2 CHILLER START/STOP			X	
*	C	R11	330-CH3 CHILLER START/STOP			X	
*	D	R12	330-CH4 CHILLER START/STOP			X	
*	E	R5	330-P5 PRIMARY CHILLED WATER PUMP START/STOP			X	
*	F	R6	330-P6 PRIMARY CHILLED WATER PUMP START/STOP			X	
*	G	R7	330-P7 PRIMARY CHILLED WATER PUMP START/STOP			X	
*	H	R8	330-P8 PRIMARY CHILLED WATER PUMP START/STOP			X	
	I	VSMC	330-P4 SECONDARY CHILLED WATER PUMP START/STOP (EXISTING)			X	
	J	VSMC	330-P4 SECONDARY CHILLED WATER PUMP FLOW (EXISTING)				X
	K	VSMC	330-P3 SECONDARY CHILLED WATER PUMP START/STOP (EXISTING)			X	
	L	VSMC	330-P3 SECONDARY CHILLED WATER PUMP FLOW (EXISTING)				X
	M	VSMC	330-P2 SECONDARY CHILLED WATER PUMP START/STOP (EXISTING)			X	
	N	VSMC	330-P2 SECONDARY CHILLED WATER PUMP FLOW (EXISTING)				X
	O	VSMC	330-P1 SECONDARY CHILLED WATER PUMP START/STOP (EXISTING)			X	
	P	VSMC	330-P1 SECONDARY CHILLED WATER PUMP FLOW (EXISTING)				X
*	Q	T21	CHILLED WATER SUPPLY SETPOINT (TO CHILLERS)				X
*	R	R9	330-P9 CONDENSER WATER PUMP START/STOP			X	
*	S	R10	330-P10 CONDENSER WATER PUMP START/STOP			X	
*	T	R11	330-P11 CONDENSER WATER PUMP START/STOP			X	
*	U	R12	330-P12 CONDENSER WATER PUMP START/STOP			X	

* INDICATES DEVICE REPLACEMENT, REFER TO SCHEMATIC FOR ADDITIONAL INFORMATION.



Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: CONTROLS AND AUTOMATION

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 06/03/2014 | Checked: DLE | Drawn: PCW

Project No. VA Project No. 552-15-203 Project No. 2013-04014

Building Number: 330

Drawing Number: 330M701

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6/3/2014 8:35:28 AM

GENERAL NOTES (APPLIES TO ALL CONTROL SHEETS)

1 A COMPLETE SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS SHALL BE INSTALLED UNDER THIS CONTRACT AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF CONTROL FOR VARIOUS ITEMS OF EQUIPMENT AND SYSTEMS AS DESCRIBED HEREINAFTER. THE SYSTEM SHALL BE A DIRECT DIGITAL CONTROL SYSTEM UTILIZING ELECTRIC ACTUATION.

2 ELECTRICAL WORK INCLUDES A POWER SOURCE TO THE MOTOR STARTERS. ALL HVAC POWER SOURCES REQUIRED BEYOND THESE STARTERS OR BEYOND SOURCES EXPLICITLY SHOWN ON THE ELECTRICAL DRAWINGS, SHALL BE PROVIDED UNDER THE ATC WORK. THIS WORK SHALL INCLUDE BUT NOT BE LIMITED TO WIRING, CONDUIT, TRANSFORMERS, RELAYS AND FUSES.

3 BULB WELLS FOR TEMPERATURE SENSING AS INDICATED SHALL BE FURNISHED UNDER THE ATC WORK AND INSTALLED AS PART OF THE HVAC PIPING WORK. PIPING WORK SHALL INCLUDE PROPERLY SIZED WELDOLET OR THREADOLET FITTINGS PLACED AS DIRECTED BY THE CONTROL SYSTEM SUPPLIER

4 POINTS LIST IS SHOWN AS AN AID TO THE CONTRACTOR INDICATING THE MINUMUM POINTS REQUIRED FOR CONTROL AND MONITORING. ALL INPUT AND OUTPUT POINTS, AND THEIR REQUIRED INTERFACE AND ACCESSORY HARDWARE, SHALL BE PROVIDED FOR A COMPLETE AND FUNCTIONAL CONTROL SYSTEM. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THESE POINTS, ALONG WITH ADDITIONAL DIRECT DIGITAL CONTROL PANEL(S) (IF REQUIRED), SHALL ALSO BE PROVIDED.

5 ALL LIGHT LINE WEIGHTS SHOWN ON THIS SHEET INDICATE EXISTING DEVICES/POINTS/EQUIPMENT TO REMAIN.

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ELECTRICAL SYMBOLS - DIAGRAM

	DELTA CONNECTION
	MOTOR, SINGLE-PHASE
	MOTOR, THREE-PHASE
	TRANSFORMER
	WYE CONNECTION
	EARTH GROUND
	JUNCTION BOX
PB	PULL BOX
	NORMALLY CLOSED RELAY CONTACT
	NORMALLY OPEN RELAY CONTACT
	FUSE WITH RATING
	MOLDED CASE CIRCUIT BREAKER
	LOW-VOLTAGE DRAWOUT AIR CIRCUIT BREAKER
	HIGH-VOLTAGE OIL CIRCUIT BREAKER
	HIGH-VOLTAGE DRAWOUT AIR CIRCUIT BREAKER
	SWITCH AND FUSE UNIT
G	GENERATOR, POWER
	POTHEAD
	STRESS CONE
	LIGHTNING ARRESTOR
M	METER
A	AMMETER
V	VOLTMETER
W	WATTMETER
WH	WATT-HOUR METER

ELECTRICAL SYMBOLS

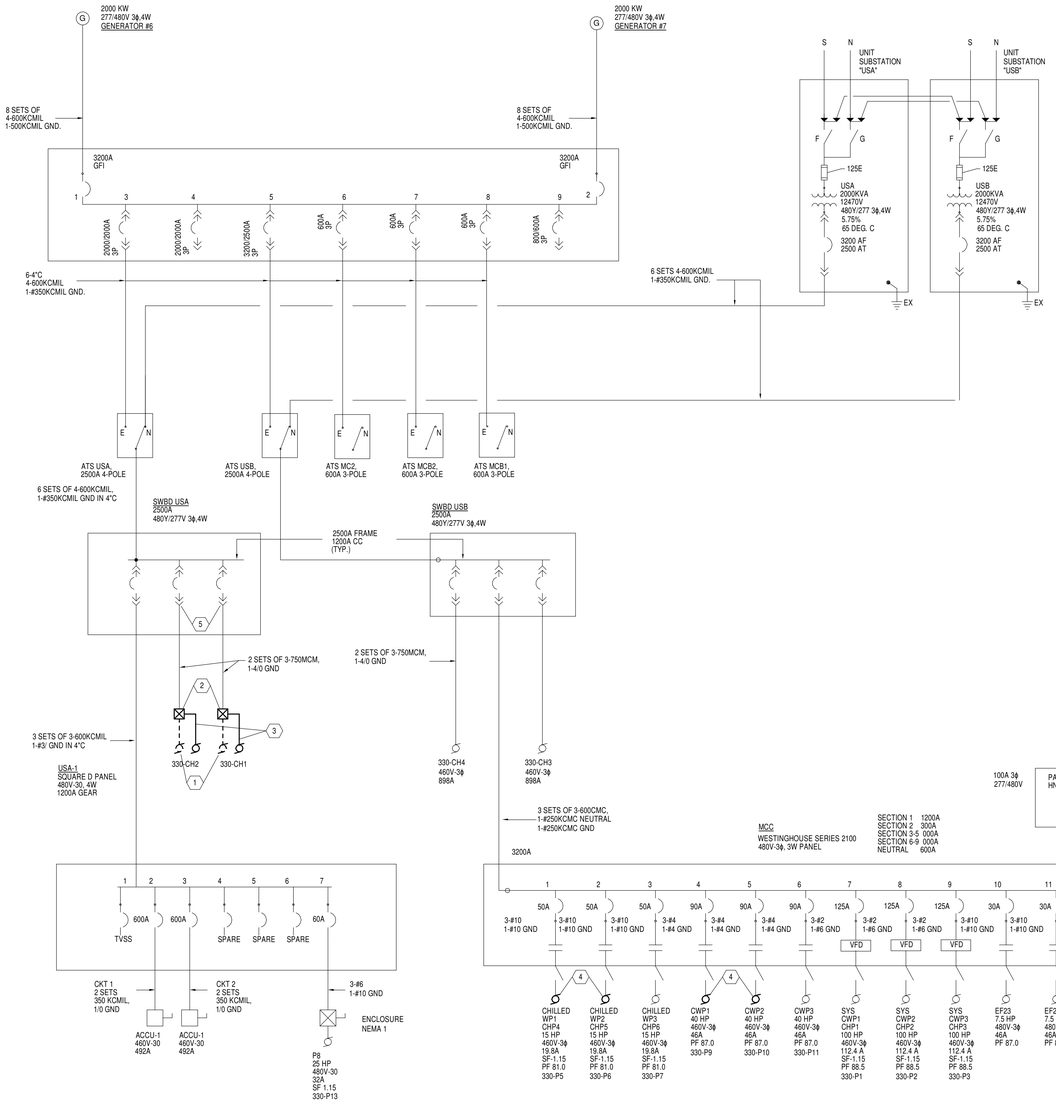
	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R (18" MH UNLESS NOTED OTHERWISE).
	20A-125V DOUBLE DUPLEX RECEPTACLE. NEMA 5-20R, (18" MH UNLESS NOTED OTHERWISE) TWO GANG ASSEMBLY.
	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R (46" MH UNLESS NOTED OTHERWISE).
GF	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R, WITH GROUND FAULT CIRCUIT INTERRUPTER (18" MH UNLESS NOTED OTHERWISE).
WP	20A-125V WEATHERPROOF DUPLEX RECEPTACLE, NEMA 5-20R (HORIZONTAL 18" MH UNLESS NOTED OTHERWISE) WITH STANDARD COVER, VERTICAL MOUNT.
J	JUNCTION BOX.
$	SINGLE POLE SWITCH (46" MH UNLESS NOTED OTHERWISE).
3 $a	THREE-WAY WALL SWITCH (46" MH UNLESS NOTED OTHERWISE). SUBSCRIPT INDICATES SWITCH LEG.
P $	SWITCH WITH NEON PILOT LIGHT. ONE-GANG ASSEMBLY (46" MH UNLESS NOTED OTHERWISE).
	ELECTRICAL PANEL OR SWITCHBOARD PER DRAWINGS.
P/B	PULL BOX.
J	DISCONNECT SWITCH.
	MOTOR STARTER.
J	COMBINATION MOTOR STARTER AND DISCONNECT SWITCH.
	ELECTRIC MOTOR.
UH	UNIT HEATER.
FC	FAN COIL.
AC	AIR CONDITIONER.
CU	CONDENSING UNIT.
UV	UNIT VENTILATOR.
T	LINE VOLTAGE THERMOSTAT.

FIRE ALARM SYMBOLS

FACP	FIRE ALARM CONTROL PANEL.
15 FSK	FIRE ALARM SPEAKER & SIGNAL LIGHT (80" AFF). (# WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 75 CANDELA.
15 FS	FIRE ALARM BELL & SIGNAL LIGHT (80" AFF). (# WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 75 CANDELA.
15 FSCH	FIRE ALARM CHIME & SIGNAL LIGHT (80" AFF). (# WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 75 CANDELA.
15 FSHK	FIRE ALARM HORN & SIGNAL LIGHT (80" AFF). (# WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 75 CANDELA.
15 FS	FIRE ALARM SIGNALING LIGHT (80" AFF). (# WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 75 CANDELA.
S F	CEILING MOUNTED FIRE ALARM SPEAKER.
FSK	FIRE ALARM MANUAL STATION (46" MH UNLESS NOTED OTHERWISE). SUBSCRIPT "K" INDICATES KEY OPERATED.
S	CEILING MOUNTED SMOKE DETECTOR.
DC	ELECTRIC RELEASE DOOR CLOSER.
DH	ELECTRO-MAGNETIC DOOR HOLDER.
FS	WATER FLOW SWITCH.
V	VALVE SUPERVISORY SWITCH.

LUMINAIRE SYMBOLS

A B	LIGHTING FIXTURE. CAPITAL LETTER DENOTES FIXTURE TYPE, LOWER CASE LETTER DENOTES SWITCHING ARRANGEMENT.
	LIGHTING FIXTURE ON NIGHT LIGHT OR EMERGENCY CIRCUIT.
	EXIT LIGHTING FIXTURE, ARROWS AS INDICATED.
	LIGHTING, TWO HEAD EMERGENCY BATTERY POWER



ABBREVIATIONS

AAP - AREA ALARM PANEL - MEDICAL GAS	ID - INSIDE DIAMETER
CC - ACCESS	IN - INCHES
ADJ - ADJUSTABLE	
AF - ARC FAULT CIRCUIT INTERUPTER	KEC - KITCHEN EQUIPMENT CONTRACTOR
AFCI - ARC FAULT CIRCUIT INTERUPTER	
AFF - ABOVE FINISHED FLOOR TO BOTTOM OF ITEM	L - LENGTH
AFG - ABOVE FINISHED GRADE TO BOTTOM OF ITEM	LBS - POUNDS
ALT - ALTERNATE	
AP - ACCESS PANEL	MAP - MASTER ALARM PANEL (MEDICAL GAS)
APPROX - APPROXIMATE	MAX - MAXIMUM
ARCH - ARCHITECT OR ARCHITECTURAL	MEZZ - MEZZANINE
ASSY - ASSEMBLY	MFR - MANUFACTURER
ATS - AUTOMATIC TRANSFER SWITCH	MH - MANHOLE OR MOUNTING HEIGHT TO CENTER LINE OF ITEM
	MIN - MINIMUM OR MINUTE
BLDG - BUILDING	MISC - MISCELLANEOUS
BOE - BOTTOM OF EQUIPMENT	MTD - MOUNTED
BOT - BOTTOM	MTG - MOUNTING
BTWN - BETWEEN	
	NIC - NOT IN CONTRACT
CFCI - CONTRACTOR FURNISHED CONTRACTOR INSTALLED	NOM - NOMINAL
CKT - CIRCUIT	NTS - NOT TO SCALE
CLG - CEILING	
CMU - CONCRETE MASONRY UNIT	OD - OUTSIDE DIAMETER
CONN - CONNECT OR CONNECTION	OFCI - OWNER FURNISHED CONTRACTOR INSTALLED
CONTR - CONTRACTOR	OFOI - OWNER FURNISHED OWNER INSTALLED
CORR - CORRIDOR	
CTR - CENTER	PC - PLUMBING CONTRACTOR (DIVISION 22)
	PLBG - PLUMBING
D - DEPTH	
DET - DETAIL	RAD - RADIUS
DIA - DIAMETER	REC - RECESSED
DIM - DIMENSION	REQD - REQUIRED
DIV - DIVISION	RI - ROUGH-IN
DN - DOWN	
DWG - DRAWING	S - SURFACE MOUNTED
	SC - SECURITY CONTRACTOR
EA - EACH	SCH - SCHEDULE
EC - ELECTRICAL CONTRACTOR (DIVISION 26)	SHT - SHEET
EJ - EXPANSION JOINT	SMS - SECURITY MANAGEMENT SYSTEM
ELEC - ELECTRICAL	SPEC - SPECIFICATIONS
ELEV - ELEVATION OR ELEVATOR	SQ - SQUARE
EM - EMERGENCY	SS - STAINLESS STEEL
EQ - EQUAL	STD - STANDARD
EQS - EQUIPMENT SUPPLIER	STRUC - STRUCTURAL OR STRUCTURE
EQUIP - EQUIPMENT	SUC - SITE UTILITY CONTRACTOR
ETR - EXISTING TO REMAIN	
EX - EXISTING	TC - TECHNOLOGY CONTRACTOR
EXP - EXPANSION	TEMP - TEMPERATURE
EXT - EXTERIOR	TOE - TOP OF EQUIPMENT
	TYP - TYPICAL
FCE - FIRE CONTROL EQUIPMENT	
FF - FINISHED FLOOR ELEVATION	UNO - UNLESS NOTED OTHERWISE
FLR - FLOOR	
FSC - FIRE SUPPRESSION CONTRACTOR (DIVISION 21)	VFD - VARIABLE FREQUENCY DRIVE
FT - FEET	VOL - VOLUME
FTG - FOOTING	
	W/ - WITH
GC - GENERAL CONTRACTOR	W/O - WITHOUT
GF - GROUND FAULT CIRCUIT INTERRUPTER	WP - WEATHERPROOF
GFCI - GROUND FAULT CIRCUIT INTERRUPTER OR GOVERNMENT FURNISHED CONTRACTOR INSTALLED	ZVC - ZONE VALVE CABINET
GFFT - GROUND FAULT FEED THRU	
HC - HVAC CONTRACTOR (DIVISION 23)	
HP - HORSE POWER OR HIGH POINT	
HVAC - HEATING, VENTILATING, AND AIR CONDITIONING	

NOTES

1. DISCONNECT EXISTING CHILLER AND REMOVE CIRCUITRY BACK TO STARTER ENCLOSURE.
2. REMOVE STARTER, CONTROLS, INDICATOR LIGHTS, ETC. FROM STARTER ENCLOSURE. SPLICE FEEDER WITH IRREVERSIBLE HYDRAULIC CRIMP CONNECTORS.
3. INTERCEPT AND EXTEND FEEDER TO NEW CHILLER. RUN 2 SETS OF (3-400 KCMIL, #3/0 GRD. IN 4"C.).
4. DISCONNECT PUMP MOTOR AND RECONNECT TO EXISTING SOURCE.
5. ADJUST LTPU TO 800 AMPS.

SHEET LIST	
Sheet Number	Sheet Name
330E101	SYMBOLS AND SINGLE LINE DIAGRAM
330E501	DETAILS
330ED101	CHILLER PLANT FLOOR PLAN - REMOVALS
330EP101	CHILLER PLANT FLOOR PLAN - POWER

Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: SYMBOLS AND SINGLE LINE DIAGRAM

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 6/03/2014 | Checked: MSG | Drawn: SC

Project No. VA Project No. 552-15-203 Project No. 2013-04014

Building Number: 330

Drawing Number: 330E101

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Department of Veterans Affairs

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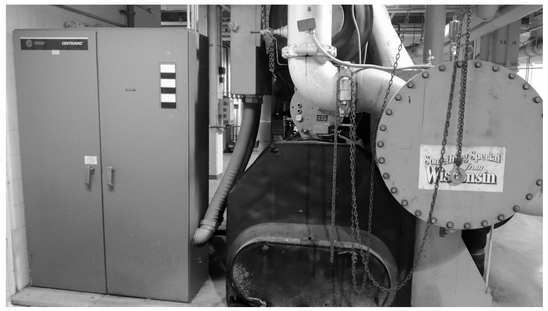
C **SITE PHOTOGRAPH**
SCALE: NONE

A **SITE PHOTOGRAPH**
SCALE: NONE



B **SITE PHOTOGRAPH**
SCALE: NONE

Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: DETAILS

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 6/03/2014 | Checked: MSG | Drawn: SC

Project No.
VA Project No. 552-15-203
Project No. 2013-04014

Building Number: 330

Drawing Number: 330E501

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three inches = one foot
one and one-half inches = one foot
one inch = one foot
three-quarters inch = one foot
one-half inch = one foot
three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

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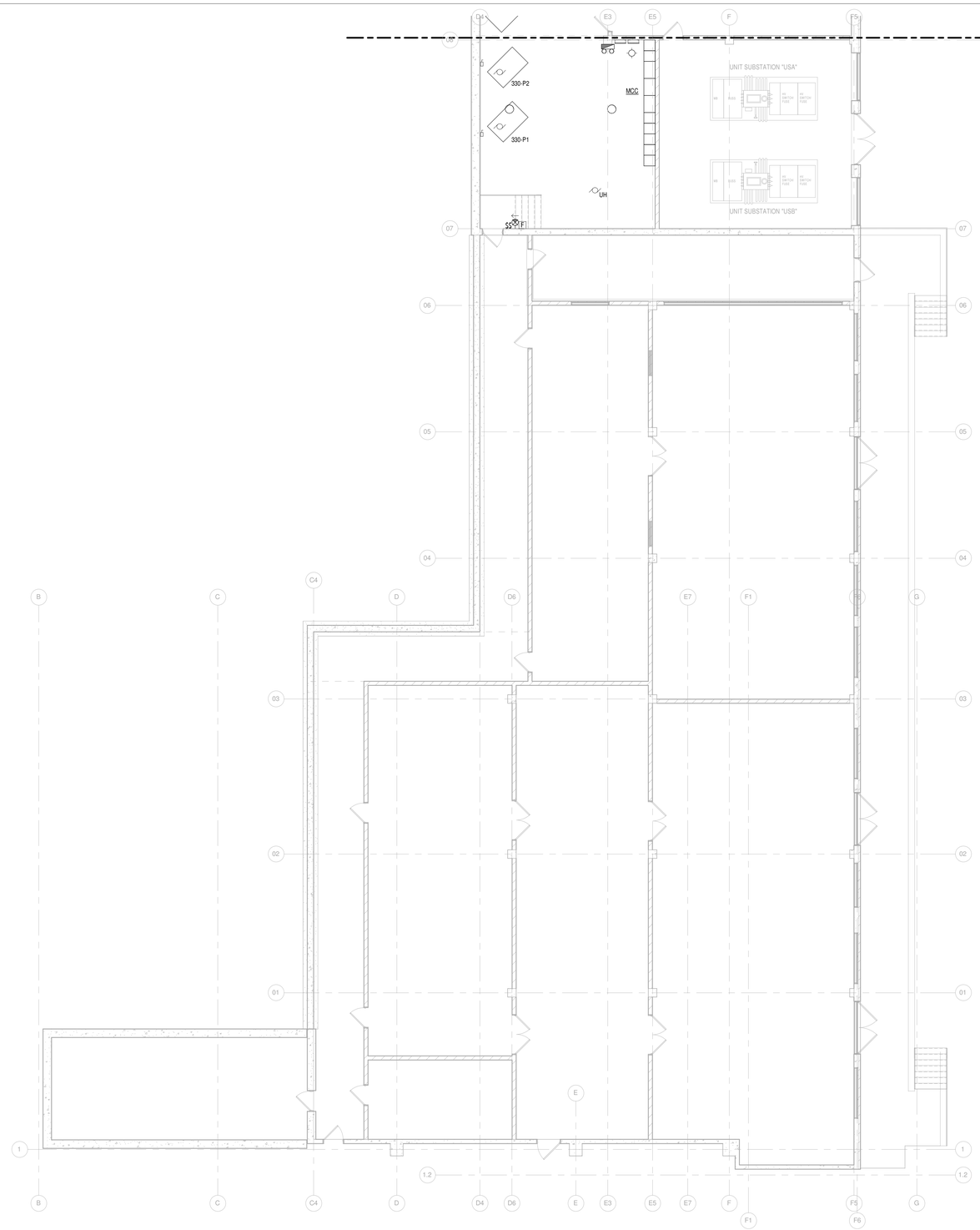
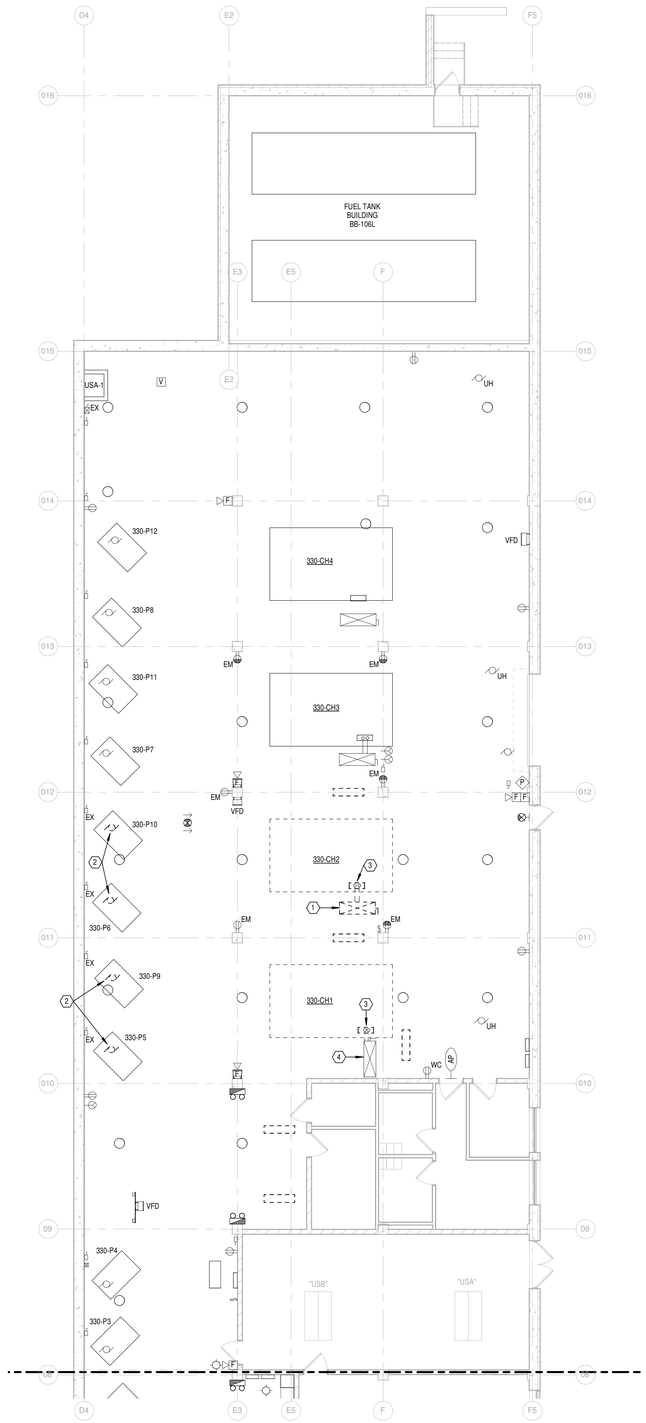
NOTES

1. REMOVE STARTER, OVERLOADS, CONTROLS, ETC. REFER TO SINGLE LINE DIAGRAM. MAINTAIN UNDERGROUND FEEDER TO SOURCE.
2. DISCONNECT PUMP MOTOR AND RECONNECT NEW TO EXISTING SOURCE (MCC).
3. DISCONNECT CHILLER AND REMOVE FEEDER PER SINGLE LINE DIAGRAM.
4. REMOVE STARTER, OVERLOADS, CONTROLS, ETC. REFER TO SINGLE LINE DIAGRAM. MAINTAIN CABINET FOR NEW WORK. MAINTAIN UNDERGROUND FEEDER TO SOURCE.



1 **CHILLER PLANT - REMOVALS**
SCALE: 1/8" = 1'-0"



2 **CHILLER PLANT - REMOVALS**
SCALE: 1/8" = 1'-0"

Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: CHILLER PLANT FLOOR PLAN - REMOVALS

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 6/03/2014 | Checked: MSG | Drawn: SC

Project No.
VA Project No. 552-15-203
Project No. 2013-04014

Building Number: 330

Drawing Number: 330ED101

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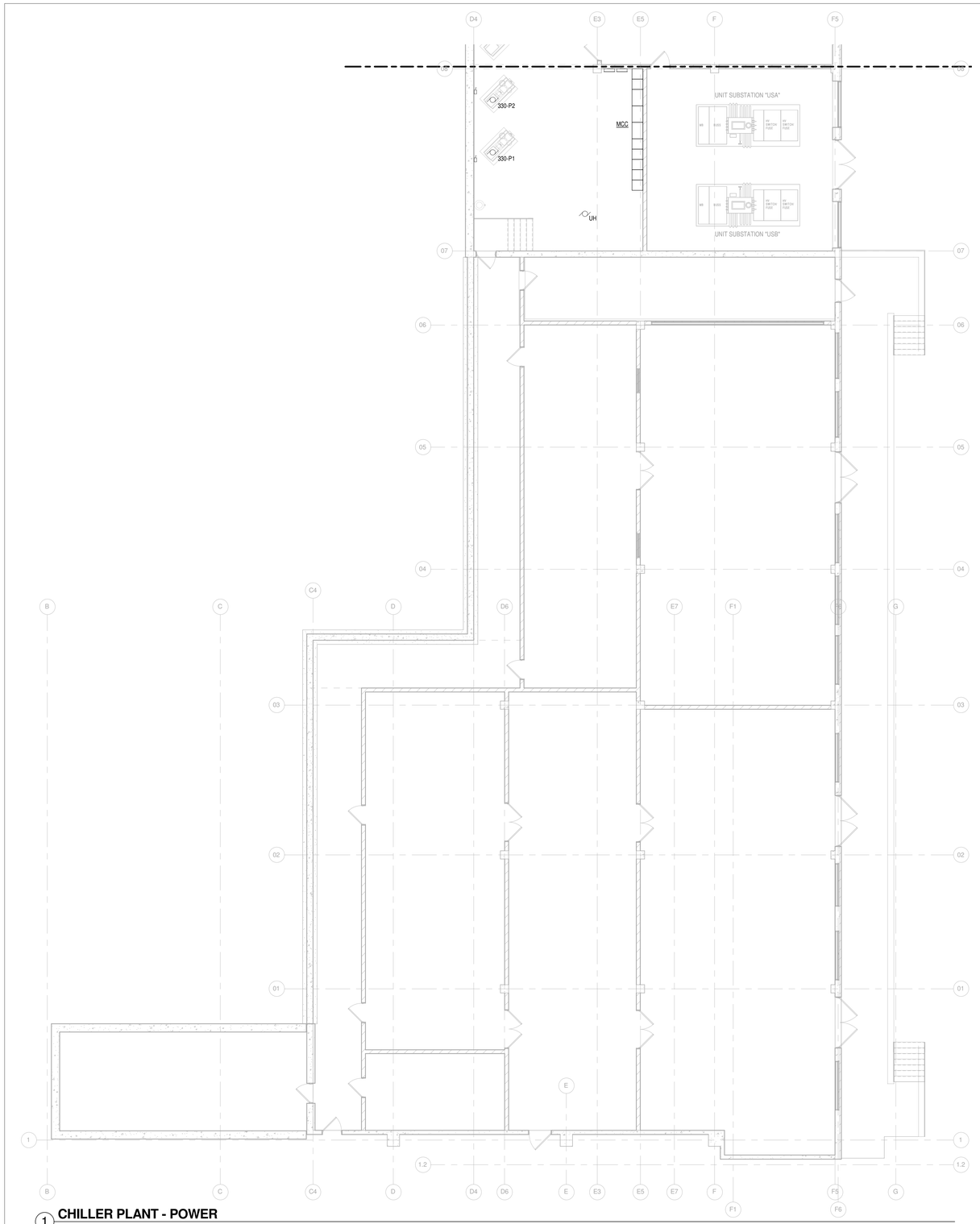
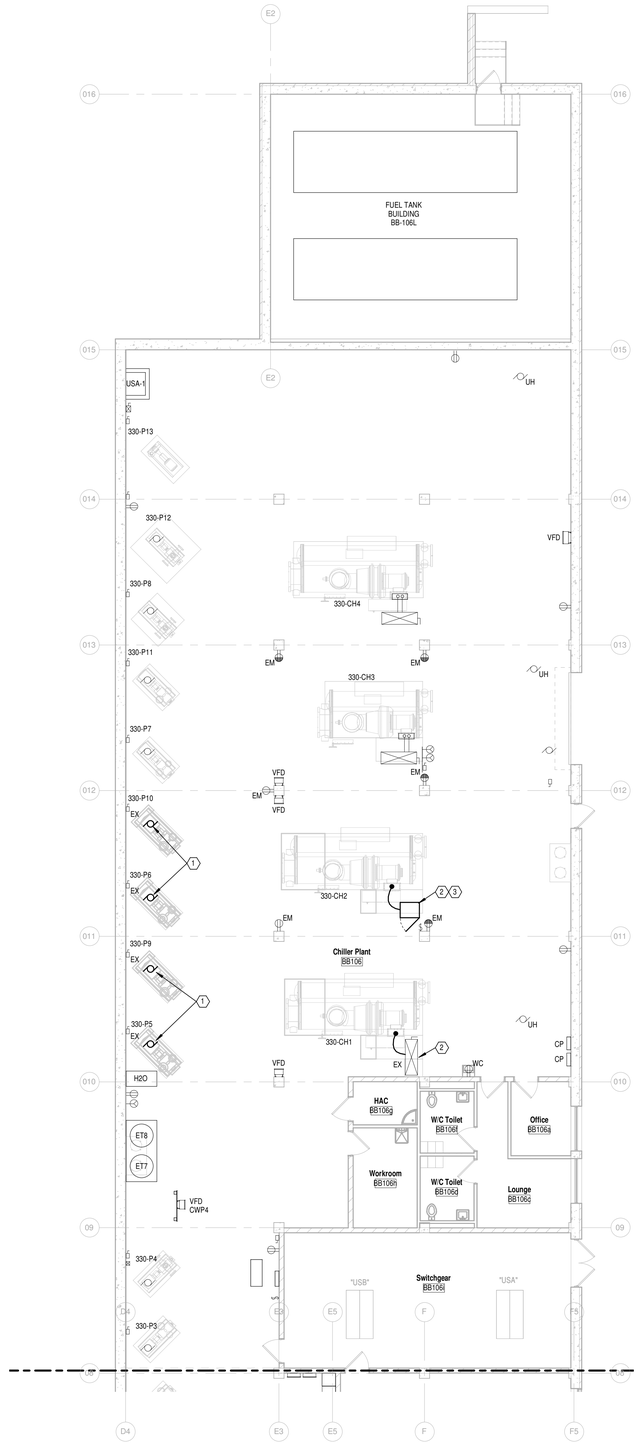
three inches = one foot
one and one-half inches = one foot
one inch = one foot
three-quarters inch = one foot
one-half inch = one foot
three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

FULLY SPRINKLERED



1 **CHILLER PLANT - POWER**
SCALE: 1/8" = 1'-0"



2 **CHILLER PLANT - POWER**
SCALE: 1/8" = 1'-0"

NOTES

1. RECONNECT PUMP MOTOR TO EXISTING SOURCE. REFER TO SINGLE LINE.
2. SPLICE EXISTING CHILLER FEEDER WITH IRREVERSIBLE HYDRAULIC CRIMP CONNECTORS AND EXTEND TO NEW CHILLER. REFER TO SINGLE LINE.
3. PROVIDE NEW SPLICE CABINET SET OVER EXISTING 4" CONDUITS AND 750 KCMIL CONDUCTORS RISING FROM GRADE. CABINET SHALL HAVE HINGED LOCKABLE DOOR.

Revisions	Date

CONSULTANTS:

Heapy Project Number: 2013-04014

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Drawing Title: CHILLER PLANT FLOOR PLAN - POWER

Approved: Project Director

Project Title: Replace Chillers 1 & 2 B330

Location: Dayton, Ohio

Date: 6/03/2014 | Checked: MSG | Drawn: SC

Project No.
VA Project No. 552-15-203
Project No. 2013-04014

Building Number: 330

Drawing Number: 330EP101

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